K. Academies

TRANSACTIONS

OF THE

ROYAL SOCIETY

OF

EDINBURGH.

VOL. XVII.—PART II.

CONTAINING THE

MAKERSTOUN MAGNETICAL AND METEOROLOGICAL OBSERVATIONS

FOR

1843.

EDINBURGH:
PUBLISHED BY ROBERT GRANT & SON, 82 PRINCES STREET; AND
T. CADELL, STRAND, LONDON.

MDCCCXLVII.

47
8 / 4
63

BRITISH MUSEUM

PRINTED BY NEILL AND CO., OLD FISHMARKET, EDINBURGH.

OBSERVATIONS

IN

MAGNETISM AND METEOROLOGY,

MADE AT

MAKERSTOUN IN SCOTLAND,

IN THE OBSERVATORY OF

GENERAL SIR THOMAS MAKDOUGALL BRISBANE, BART.,

G.C.B., G.C.H., D.C.L., LL.D., F.R.S., F.R.A.S., H.M.R.I.A., PRESIDENT OF THE ROYAL SOCIETY OF EDINBURGH,
AND CORRESPONDING MEMBER OF THE INSTITUTE OF FRANCE,

In 1843.

DISCUSSED AND EDITED BY

JOHN ALLAN BROUN, Esq.,

DIRECTOR OF THE OBSERVATORY.

EDINBURGH:
PRINTED BY NEILL AND COMPANY.

MDCCCXLVII.

BRITISH MUSEUM

CONTENTS.

PAGE

INTRODUCTION—

Position and Description of the Observatory, ... ix
System of Observation and Personal Establishment, ... xi

MAGNETICAL INSTRUMENTS—

Declinometer—

Description of the Declinometer, ... xii
Values of the Scale Divisions, ... xiii
Scale Reading for the Magnetic Axis, ... xv
Correction for the effects of the Bifilar and Balance Magnets, ... xvi
Correction for the effect of the Copper Ring or Damper, ... xvii
Correction for the Non-Parallelism of the faces of the Plates of Glass in the Box, xviii
Correction for the Torsion Force of the Suspension Thread, ... xviii
Facts relating to the Suspension Threads, ... xix
Accidental Sources of Error xx
Adopted Scale Zeros xxi
Time of Vibration of the Declination Magnet xxi
Absolute Magnetic Declination xxii

Unifilar Magnetometer and Observations of the Absolute Horizontal Intensity of the Earth's Magnetism—

Position and Description of the Instrument, ... xxiii
Mode of Observation and Reduction, ... xxiv
Observations of Absolute Horizontal Intensity, ... xxvi

Bifilar or Horizontal Force Magnetometer—

Description of the Instrument, ... xxix
Adjustments and Values of Constants, ... xxxi
Constants for Reduction after altering the Reading of the Torsion Circle, ... xxxiii
Corrections for the effects of the Declination and Balance Magnets, ... xxxiv
Time of Vibration of the Bifilar Magnet, ... xxxiv
Mode of Observation, ... xxxiv
Temperature of the Magnet, ... xxxiv

Balance or Vertical Force Magnetometer—

Description and Theory of the Instrument, ... xxxv
Practical difficulties in Dr LLOYD's method of determining the Constants, ... xxxvi
New method of determining the Constants (Note), ... xxxvi
Another method (that used in this volume) of determining the Constants, ... xxxvii
Values of Constants and Adjustments, ... xxxviii
Time of Vibration of the Balance Needle, ... xxxviii

PAGE

Determination of the Temperature Coefficients of the Magnets—

Temperature Coefficient of the Deflection Magnet xlii
Temperature Coefficient of the Balance Magnet, ... xliii
Temperature Coefficient of the Bifilar Magnet, ... l

Inclinometer—

Description of the Instrument liii
Facts relating to Observations, ... liv

METEOROLOGICAL INSTRUMENTS—

Barometer—

Description of the Instrument, ... lv
Corrections applied to the Observations, ... lv

Thermometers—

Description and Position of the Dry and Wet Bulb Thermometers, ... lvi
Position of Maximum and Minimum Register Thermometers, ... lvii
Corrections for Thermometers lvii

Rain-Gauges—

Description and Positions of the Rain-Gauges, ... lviii

Anemometer—

Position and Description of the Anemometer, ... lviii
Mode of Observation, ... lx

STATE OF THE SKY—

Mode of estimating the Surface and Motions of Clouds, ... lx

CLOCK, STOVE, AND COMPUTING ROOM—

Mean Time Clock, ... lx
Stove and Computing Room, ... lx

DESCRIPTION OF THE TABLES OF OBSERVATIONS—

Description of Tables containing the Daily Observations of Magnetometers, ... lxi
Description of Tables containing the Term-Day Observations of Magnetometers, ... lxii
Description of Tables containing the Extra Observations of Magnetometers, ... lxii
Description of Tables containing the Daily Meteorological Observations, ... lxii
Description of Tables containing the Term-Day and Extra Meteorological Observations, ... lxiii
Reference to Tables of Abstracts, ... lxiv
Account of the method adopted in Projecting and Printing the Curves of Term-Day Observations, ... lxiv

GENERAL REMARKS—

Reasons for the methods adopted in Reducing and Printing the Magnetical Observations, ... lxiv

POSTSCRIPT—

New method of determining the Value of the Scale Divisions of the Bifilar Magnetometer in Parts of the whole Horizontal Force, ... lxv
Results of Experiments in which the new method was employed, ... lxvi

Page

MAGNETICAL OBSERVATIONS—

Daily Observations of Magnetometers, ... 1
Term-Day Observations of Magnetometers, ... 29
Extra Observations of Magnetometers, ... 49
Observations of Magnetic Dip, ... 75
Observations of Absolute Horizontal Intensity, ... 79

METEOROLOGICAL OBSERVATIONS—

Daily Meteorological Observations, ... 85
Term-Day and Extra Meteorological Observations, ... 199

ABSTRACTS OF THE RESULTS OF THE MAGNETICAL OBSERVATIONS, 219

Abstracts for the Magnetic Declination—
- Annual Period, ... 221
- Variations with reference to the Position of the Moon, ... 223
- Secular Change, ... 224
- Diurnal Variation, ... 225
- Ranges of the Variations with reference to the Sun, ... 229
- Ranges of the Variations with reference to the Position of the Moon, ... 229

Horizontal Component of Magnetic Force—
- Annual Period, ... 230
- Variations with reference to the Position of the Moon, ... 232
- Secular Change, ... 234
- Diurnal Variation, ... 235
- Ranges of the Variations with reference to the Sun, ... 236
- Ranges of the Variations with reference to the Moon, ... 238

Vertical Component of Magnetic Force—
- Annual Period, ... 240
- Variations with reference to the Position of the Moon, ... 241
- Diurnal Variation, ... 243
- Secular Change, ... 245
- Ranges of the Monthly Means of the Diurnal Variation, ... 245
- Diurnal Ranges with reference to the Position of the Moon, ... 247

Magnetic Dip—
- Secular Change, ... 247
- Annual Period, ... 247
- Diurnal Variation, ... 248
- Ranges of the Monthly Means of the Diurnal Variation, ... 249
- Variations with reference to the Position of the Moon, ... 250

Total Magnetic Force—
- Secular Change, ... 251
- Annual Period, ... 251
- Diurnal Variation, ... 252
- Ranges of the Monthly Means of the Diurnal Variation, ... 253
- Variations with reference to the Position of the Moon, ... 253

Page

Extreme Positions—
- During the Daily Observations; with the Ranges, 254
- During observed Disturbances; with the Ranges, 255
- During Term-Days; with the Ranges, 256
- Mean Positive and Negative Excesses of the Extreme Excursions of the Three Magnets, 257
- Of the Daily Means, 258
- Extreme Values of the Diurnal Ranges, 259

Inclinometer—
- Monthly Means of the Observed Magnetic Dip, 259

ABSTRACTS OF THE RESULTS OF THE METEOROLOGICAL OBSERVATIONS, 261

Temperature of the Air—
- Annual Variation, 263
- Diurnal Variation, 264
- Approximations to the Monthly Means from Two Observations, 265
- Diurnal Ranges 267
- Extreme Temperatures, 267

Temperature of Evaporation—
- Annual Variation, 268
- Diurnal Variation, 269
- Range of the Diurnal Variation, 269

Pressure of Aqueous Vapour—
- Annual Variation, 270
- Variations with reference to the Position of the Moon, 271
- Extreme Daily Means; with the Ranges 271
- Diurnal Variation, 272
- Range of the Diurnal Variation, 273

Relative Humidity—
- Annual Variation, 274
- Extreme Daily Means; with the Ranges, 274
- Variations with reference to the Position of the Moon, 275
- Diurnal Variation, 275
- Range of the Diurnal Variation, 276

Atmospheric Pressure—
- Annual Variation, 277
- Variations with reference to the Position of the Moon, 278
- Diurnal Ranges, 279
- Diurnal Variation, 280
- Range of the Diurnal Variation, 280
- Extreme Readings and Daily Means; with the Ranges, 281

Pressure of Dry Air—
- Annual Variation, 282
- Diurnal Variation, 283
- Extremes of the Daily Means; with the Ranges, 285

PAGE

PRESSURE AND DIRECTION OF THE WIND—

Annual Variation of the Maximum Pressures 286
Annual Variation of the Approximate Means 287
Daily Maxima, ... 288
Diurnal Variation of the Maximum Pressures, ... 289
Diurnal Variation of the Approximate Means, ... 290
Monthly Maxima, ... 291
Annual Variation of the Number of Times which the Wind blew in 1843, ... 294
Annual Variation of the Number of the Points of the Compass in which the Wind blew, ... 294
Annual Variation of the Sums of Pressures, ... 294
Annual Variation of the Mean Pressure *while* blowing, ... 294
Annual Variation of the Resultant Pressure, ... 295
Direction of the Resultant, ... 295
Diurnal Variation of the Number of Times which the Wind blew, ... 298
Diurnal Variation of the Number of the Points of the Compass in which the Wind blew, ... 298
Diurnal Variation of the Sums of Pressures, ... 298
Diurnal Variation of the Mean Pressure *while* blowing, ... 298
Times which the Wind blew from different Points, ... 299
Sums of the Pressures with which the Wind blew from different Points, ... 299
Mean Pressure *while* blowing from different Points, ... 299
Diurnal Variation of the Resolved Pressures in N. E. S. and W., and of the Resultant, ... 300
Diurnal Variation of the direction of the Resultant, ... 300

MOTIONS OF THE CLOUDS—

Differences of the Motions of the Upper and Lower Currents of Air, ... 300

SURFACE OF CLOUD—

Annual Variation, ... 302
Variation with reference to the Position of the Moon, ... 303
Extremes of the Daily Means, ... 303
Diurnal Variation, ... 304

RAIN—

Monthly Sums, ... 305
Monthly Extremes, ... 305
Number of rainy days, ... 305
Average daily fall for each Month, ... 305

ERRATA IN THIS VOLUME OF OBSERVATIONS FOR 1843.

Page xxxi., Introduction, *for* 1·1223 *read* 1·1233
— 14, June 22^{d} 2^{h}, Balance Magnetometer, *for* 645·6 *read* 641·6, and *for* 65·3 *read* 64·8
— 18, Aug. 25^{d} 22^{h}, Declinometer, *for* 22·08 *read* 22·20
— 25, Nov. 24^{d} 18^{h}, Bifilar Magnetometer, *for* 521·9 *read* 522·2
— 25, Nov. 24^{d} 20^{h}, Balance Magnetometer, *for* 838·2 *read* 837·4
— 30, 14^{h} 0^{m}, Bifilar Reading, *for* 557·2 *read* 537·2
— 41, 9^{h} 0^{m}, Balance Reading, *for* 80·63 *read* 806·3
— 44, 19^{h} 5^{m}, Bifilar Reading, *for* 815·1 *read* 515·1
— 44, 18^{h} 10^{m}, Declination Reading, *for* 15·54 *read* 17·56
— 46, 14^{h} 30^{m}, Bifilar Reading, for 217·2 *read* 517·2
— 54, Mar. 7^{d} 7^{h} 53^{m}, Balance Reading, *for* 004·1 *read* 1004·1
— 54, Mar. 7^{d} 8^{h} 13^{m}, Balance Reading, *for* 1976·7 *read* 976·7
— 54, Mar. 12^{d} 7^{h} 15^{m}, Balance Minute of Observation, place 15 before 1070·0
— 67, July 25^{d} 10^{h} 23^{m}, Balance Reading, *for* 826·6 *read* 626·6
— 73, first line of figures, 8th column, *for* Dec. 28^{d} 2^{h} *read* Dec. 28^{d} 3^{h}
— 86, Jan. 4^{d}, col. Max. and Min., *for* 26·5 *read* 34·0 ?
— 146, July 21^{d} 8^{h}, col. Diff., *for* 3·1 *read* 2·9
— 170, Oct. 8^{d} 18^{h}, col. Barometer, *for* 30·229 *read* 29·229

ERRATA IN THE VOLUME OF OBSERVATIONS FOR 1841 AND 1842.

Page xv., Introduction, 6th line from foot, *delete* between
— xx., —— lines 8 and 2 from foot, *for* A *read* A′
— xx., —— last line, after A add = 180° − A′
— xxxv., —— last line but one *for* 2° 30′ *read* 12° 30′
— 137, Table III., *delete* 25° below Range.

INTRODUCTION.

DESCRIPTIONS OF INSTRUMENTS, ADJUSTMENTS, AND DATA FOR REDUCTIONS.

§ 1. POSITION AND DESCRIPTION OF THE OBSERVATORY.

1. The Magnetical and Meteorological Observatory at Makerstoun, in Roxburghshire, was erected by General Sir THOMAS MAKDOUGALL BRISBANE, Bart., in the year 1841. The geographical co-ordinates are as follow :—

Latitude, ...	55° 34′ 45″ N.*
Longitude, ...	$0^{h}\ 10^{m}\ 3{\cdot}5^{s}$ W. of Greenwich.†

Height of the barometer cistern above mean water at Berwick, 213 feet.

The last ordinate was obtained by connecting the Astronomical Observatory with levels made from Berwick to the opposite bank of the Tweed, for a railway from Berwick to Melrose. This determination has been verified by the results of many series of barometrical observations, made simultaneously at Berwick and Holy Island by Sir T. M. BRISBANE, and at Makerstoun by Miss M. BRISBANE. The following are examples of the results taken at random :—

Height of the cistern of the barometer in Sir T. M. BRISBANE's library above mean water at

					Feet.
Berwick,	Aug. 21, 22		1837,	10 Comparisons, . .	221·6
Holy Island,	Oct. 9,	—4 P.M.	1839,	1	226·2
... ...	Oct. 10, 16	—9 A.M.	...	6	229·7
... ...	...	... —Noon,	...	6	227·1
... ...	...	... —3 P.M.	...	4	229·3
... ...	... ...		...	2	220·9

	Feet.
Giving the results weights depending on the number of comparisons, the mean is	225·6
The correction to the Observatory barometer cistern (by levels)	– 12·0
Height of Observatory cistern, ...	213·6

---

* Ast. Nach., vol. x. p. 214.

† Mem. Ast. Soc., vol. xi. p. 171.

Comparisons of simultaneous observations made at the Edinburgh Observatory by the late Professor HENDERSON, and at the Makerstoun Observatory, gave the difference of heights of the barometer cisterns :—

	Feet.
Edinburgh Observatory *minus* Makerstoun Observatory, ...	130
Height of the Edinburgh barometer cistern above mean water at Leith (by levels),	352
Height of Makerstoun barometer cistern, ...	222

2. The Magnetic Observatory is situate nearly on the summit of a ridge, which occupies the left or northern bank of the Tweed, being 540 feet distant from, and 80 feet above that river. The Astronomical Observatory is upon the highest part of the ridge, 140 feet due west of the Magnetic Observatory. A fair horizon is seen from the Observatory hill, being bounded about 10 miles to the east by a slightly swelling ground, which, to the east-south-east, seems to join the Cheviot Hills. The view is bounded about a mile to south and south-west by a ridge, forming the right bank of the Tweed; about 500 feet to the south-west and north-west by masses of trees in the Makerstoun grounds; and from 1 to 3 miles to north-west, north, and north-east, by an elevated ridge, which forms, to some extent, the northern boundary of the valley of the Tweed. From north, by the east, to the south, the elevation of the horizon, with a slight exception, is under 2°; from the north to the north-west, increasing from 2° to 4°; from the north-west to the south-west, the tops of the trees are elevated from 5° to 8°; and from the south-west to the south the elevation is under 4°. The highest point of the Cheviots, which is 2656 feet above the level of the sea, is about 18 miles to the east-south-east; it is occasionally referred to in the meteorological remarks on clouds.

3. The Observatory hill, it is believed, is composed of felspathic trap. The Tweed, immediately to the south, and for a mile to the east and west, flows more or less through this rock, which does not appear upon any part of the hill. The opening for a foundation to the Observatory shewed only masses of rolled pebbles, and boulders of greywacke and trap.

4. The Observatory is rectangular in its plan, 40 feet by 20 feet internally. It is formed of wood; copper nails were used; and iron carefully excluded from every part of the structure. The pillars for the magnetometers and telescopes are of stone, from 22 inches to 19 inches in diameter, and are placed upon excellent stone foundations, completely disconnected with the floor, and every part of the building. By a reference to the plan and elevation, the following details will be understood. (Plate I.)

There are two windows to the south, with the door between; and three to the north, which open like folding doors. The dimensions of the principal apartment are, 40 feet long, 12 feet broad, and 12 feet high. The two ante-rooms are each 15 feet long, 7 feet broad, and 12 feet high. The instruments are indicated in the plan as follows :—

D, The Declinometer.
  t, Its Reading Telescope.
A, The Azimuth Circle and Transit.
H, The Bifilar or Horizontal Force Magnetometer.
  t′, Its Reading Telescope.
  P, A Pillar for a Collimator (not used).
V, The Balance or Vertical Force Magnetometer.
I, The Inclinometer.
B, The Standard Barometer.
W, The Anemometer.
W′, The Wind Vane Dial-Plate.
T, The Thermometer Case.
C, The Mean Time Clock.
S, The Copper Stove.
n s, The Astronomical Meridian.
D *t*, The Magnetical Meridian.

The two vanes to the right in the elevation are those for the direction and force of the wind; the other two were added after 1843.

§ 2. SYSTEM OF OBSERVATION, AND PERSONAL ESTABLISHMENT.

5. The system of observation followed in 1841 and 1842 consisted of four daily observations of the magnetical and meteorological instruments, at the hours of 8 and 11 A.M., and 2 and 5 P.M., hours recommended by Dr LLOYD for one permanent observer;* of term observations, made once a month for 24 hours; of observations of magnetic dip; and of extra magnetical observations, made during marked magnetic disturbances. The personal establishment in 1841 and 1842 consisted of one permanent observer, and three assistants on term-days. It seemed desirable to render the daily observations somewhat more complete; and as this would also necessarily entail a greater amount of labour in reductions, Sir THOMAS BRISBANE, on my suggestion, through Professor FORBES, and with his advice, added another permanent observer to the establishment. Mr JOHN WELSH, a student in Arts of the Edinburgh University, was appointed in the end of December 1842. The term-assistants in 1843 were Messrs HOGG and DODS, who assisted in the previous year. In 1843, the daily observations were made at every *even* hour of Göttingen mean time, from 6 A.M. till 10 P.M., or at every two hours, from 5^h 10^m A.M. till 9^h 10^m P.M., Makerstoun mean time. The other observations consisted of term-

---

* The observer had also the charge of a Transit Instrument, and of several Sidereal Clocks, which were compared daily.

day and extra magnetical and meteorological observations, of observations of magnetic dip, and of the absolute horizontal magnetic force.

It will be allowable for me to express here, how much I owe, in the conduct of the Observatory, to the unceasing kindness of its founder and supporter, Sir THOMAS BRISBANE, as well as to his suggestions, and his uniform attention to every proposal that might in any way tend to the advancement of science. I owe a like acknowledgment to Professor J. D. FORBES, and also to Dr H. LLOYD.

§ 3. DECLINOMETER.

6. The declination magnetometer was obtained from GRUBB of Dublin. The magnet is 15 inches long, $\frac{7}{8}$ inch broad, and $\frac{1}{4}$ inch thick. It fits into a stirrup, whose two eyes receive an axle attached to the suspension thread. Near the north extremity, it carries a scale divided on glass; near the other (about 12 inches, the focal length, distant from the scale) a lens of $1\frac{1}{4}$ inch diameter. A marble slab, cemented to the top of the declinometer-pillar, carries two copper tubes, 35 inches long, which are connected at the top by a mahogany tie, bearing the torsion-circle and the suspension apparatus; and, about 7 inches from the slab, by another wooden cross-piece, which supports a glass tube enclosing the suspension thread; the latter cross-piece, together with two glazed lids, fitting on a wooden drum, completes the enclosure of the suspended magnet, and of the copper ring used for checking the vibrations of the magnet. There are two glazed apertures in the sides of the box; one to the north, where a small mirror throws in light upon the glass scale; the other to the south, between the lens and the reading telescope. Previously to September 1843, the glazed lids fitted loosely on the box, and the latter did not rest closely on the marble slab, so that the magnet was probably affected by external currents of air. In June 1843, a rectangular pasteboard box, open at the extremities, was placed within the cylindrical box and round the magnet, which would have some effect in destroying internal currents: in September 1843, a wooden box was substituted, formed of two pieces fitting into each other in the middle by a groove and tongue, glazed at the extremities, and having only a small aperture for the suspension thread: at the same time, all the joints of the outer box, as well as the lower edge of the inner box, were covered with velvet, and the boxes were pressed firmly against the marble slab by means of leaden weights, which were previously determined to have no effect on the position of the magnet. In order, also, to destroy any effect of radiation in the formation of aërial currents, both boxes were covered with gilt paper, internally and externally.

7. The pillar of the azimuth circle and transit used for determinations of the absolute declination, is between the pillars of the magnetometer and its reading telescope. The theodolite is by TROUGHTON; the circle is 15 inches in dia-

meter, is divided to 5 minutes, and is read to 5 seconds with the three verniers. By some accident, the circle has probably been flattened on one side, as there the verniers enter rather too much on the graduations; the error due to this is, however, very small. The lines of collimation of the theodolite and reading telescopes coincide when the middle wire of the former is made to coincide with the vertical wire of the latter. The circle is retained in the same position on its pillar, but the transit telescope is removed, excepting when required for observations of absolute declination. The reading telescope is fixed to its pillar. Following are the determinations of the data requisite in reducing the observations of the declinometer.

8. Value of the declinometer scale divisions in angular measure.

The scale generally used consists of 500 divisions; but, during observations of absolute horizontal intensity, the magnet with this scale is removed to the unifilar magnetometer, and a magnet with a scale of 300 divisions is substituted in the declinometer. The observations, Table 2, *Introduction*, for 1841–2, gave one division of the long scale = 0·′6710. Observations were also made on December 2, 4, and 5, 1843, and on October 22, 1844. The results were as follow:—

Dec. 2. 1843. Two series of observations, only one vernier of the circle read.

1st series; measures of 200 divisions; one division of the long scale = 0′·6725
2d, ... = 0′·6725

These results were obtained after applying a correction on account of the non-coincidence of the graduations of the vernier with those of the circle.

Dec. 4. 1843. One series; measures of 100 divisions; one vernier read; one division of the long scale =0·′6728.

Dec. 5. 1843. Before the previous observation, it was found that the lens of the collimator was somewhat loose; it was then, it is believed, made more so. This was owing to the frame not being screwed hard up into the collar, which was now done.

One series; one vernier read; measures of 100 divisions; one division of the long scale

$$= \begin{Bmatrix} 0'\cdot6715 \\ 0'\cdot6721 \end{Bmatrix} \text{ ; observer } \begin{Bmatrix} \text{B.} \\ \text{W.} \end{Bmatrix}$$

Oct. 22. 1844. Owing to the difference of the results on Dec. 5. 1843, from those on the previous occasions, the following short series of observations were made with much care. All the three verniers were read, the readings being made first with the right and then with the left eye; the mean of the two being taken as the true reading.

TABLE 1.—Values of one of the Long Scale Divisions.

Observer B.					Observer W.				
Scale Division.	Mean of three Verniers.	Scale Division.	Mean of three Verniers.	Value of one Division.	Scale Division.	Mean of three Verniers.	Scale Division.	Mean of three Verniers.	Value of one Division.
	° ′ ″		° ′ ″	′		° ′ ″		° ′ ″	′
160	55 18 46·25	260	54 11 34·17	0·67201	180	54 59 9·17	280	53 51 51·25	0·67300
170	55 12 4·17	270	54 4 50·21	67233	190	54 52 22·50	290	53 45 7·50	67250
180	55 5 20·83	280	53 58 2·50	67305	200	54 45 38·33	300	53 38 25·00	67222

1st series, observer B ; one long scale division = 0′·67247
2d series, observer W ; .... = 0′·67257
The adopted mean value of one division of the long scale of 500 divisions = 0′·6725.*

Aug. 5. 1843. A short series of observations was made to determine the value of one division of the short scale of 300 divisions.

Three verniers read ; measures of 50 divisions ; one division of the short scale

$$=\left\{\begin{matrix}0'\cdot7504\\0'\cdot7502\end{matrix}\right\} \text{; observer } \left\{\begin{matrix}\text{B.}\\\text{W.}\end{matrix}\right.$$

Nov. 29. 1843. Two series of observations were made with one vernier. The readings in the following Table are the means of the readings by Mr **WELSH** and myself.

TABLE 2.—Values of one of the Short Scale Divisions.

First Series. 1^h.					Second Series. 3^h.				
Scale Division.	Vernier B.	Scale Division.	Vernier B.	Value of one Division.	Scale Division.	Vernier B.	Scale Division.	Vernier B.	Value of one Division.
	° ′ ″		° ′ ″	′		° ′ ″		° ′ ″	′
40	55 26 56·5	90	54 49 27·5	0·74967	130	54 11 28·0	180	53 34 2·5	0·74850
50	55 19 26·0	100	54 41 57·5	74950	140	54 3 58·5	190	53 26 31·0	74902
60	55 11 56·0	110	54 34 27·5	74950	150	53 56 30·0	200	53 19 2·5	74902
70	55 4 3·0	120	54 26 52·0	75267	160	53 48 55·0	210	53 11 35·0	74667
80	54 56 55·5	130	54 19 23·5	75050	170	53 41 32·5	220	53 4 3·5	74967

1st series ; one division of the short scale of 300 divisions = 0′·7504
2d series ; .... = 0′·7486
The adopted value of one division of the short scale = 0′·7500.

---

* The differences in the partial results, it is believed, are not due to errors of graduation of the scale, as different comparisons give different results. If greater accuracy could be gained in the readings of the horizontal circle, it is obvious that the mean of the angle subtended by one or two hundred scale divisions ought not to be taken as the value of the angle subtended by one scale division.

9. From the adopted values of the long and short scale divisions, the co-efficient for reducing divisions of the short scale to the same value as the divisions of the long scale, is $\frac{7500}{6725} = 1{\cdot}115$; the reciprocal $= 0{\cdot}897$.

10. Determination of the scale readings at the magnetic axis of the declinometer magnet.

For this purpose, the scale reading is first observed with the magnet in its usual position (direct), and next with the magnet inverted, the stirrup being made with prolonged sides to admit of this inversion. Simultaneous observations of the unifilar magnetometer are made in order to eliminate the changes of declination during the intervals. When these eliminations are performed, the mean of the reading with the magnet, direct and inverted, is the reading at the magnetic axis. *Increasing* readings (the magnet being direct), indicate *decreasing* westerly declination.

1. *Observations with the Long Scale.*

May 5. 1843. 1 inversal (the copper ring used) gives the zero reading, 256·87
May 6. 1843. 3 .... 257·30
July 19. 1843. 6 .... 256·88
Oct. 16. 1844. In the following series the copper ring was not used.

TABLE 3.—Long Scale Reading at the Magnetic Axis of the Declination Magnet.

Position of Magnet.	Declinometer Reading.	Unifilar Reading.	Unifilar, *minus* 129 Sc. Div., reduced to the Declinometer = *u*.	Declinometer Reading.		Mean of each two direct, and of each two inverted.	Reading for Magnetic Axis.
				Direct *minus u*.	Inverted *plus u*.		
	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.
Direct	269·67	129·75	+0·84	268·83			
Inverted	245·10	129·58	0·65		245·75	268·65	257·20
Direct	268·89	129·38	0·43	268·46		245·69	257·07
Inverted	245·30	129·30	0·33		245·63	268·53	257·08
Direct	269·67	129·95	1·06	268·61		245·62	257·11
Inverted	243·92	130·52	1·69		245·61	268·69	257·15
Direct	271·33	131·29	2·55	268·78		245·57	257·17
Inverted	242·19	132·00	3·34		245·53	268·72	257·12
Direct	272·22	132·19	3·56	268·66		245·66	257·16
Inverted	241·59	132·77	4·20		245·79	268·70	257·24
Direct	273·31	133·10	4·57	268·74			

The mean reading of the long scale for the magnetic axis = 257·14.

This determination has been adopted, as the varying position of the copper ring in the other series was apt to render the results uncertain. (See No. 12.)

The zero used for the observations 1841 and 1842=255·2 (*Introduction*, 1841–2, Table 4), was used till Jan. 13. 1843, after which the previous determination was taken, as it was conceived that some change might have occurred at that date in a slight adjustment of the appendages of the magnet, made for the purpose of balancing it.

2. *Observations with the Short Scale.*

TABLE 4.—Short Scale Reading at the Magnetic Axis of the Declination Magnet.

Date.	Position of Magnet.	Declinometer Reading.	Unifilar Reading.	Unifilar, *minus* 250 Sc. Div., reduced to the Declinometer = *u*.	Declinometer Reading.		Mean of two direct or inverted.	Reading for Magnetic Axis.
					Direct *minus u*.	Inverted *plus u*.		
d. h.		Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.
July 31 3	Direct	148·91	257·15	+6·42	142·49			148·53
	Inverted	147·16	258·27	7·42		154·58		
Aug. 2 0	Direct	149·24	260·15	9·11	140·13			
	Inverted	146·37	259·70	8·70		154·07	139·10	146·58
	Direct	144·51	257·18	6·45	138·06			
Aug. 2 3	Inverted	148·90	259·41	8·45		157·35		
	Direct	145·75	260·10	9·06	136·69			147·02
Aug. 3 0	Direct	146·06	259·60	8·61	137·45			
	Inverted	150·71	255·50	4·94		155·65	137·62	146·63
	Direct	142·04	254·74	4·25	137·79			
Aug. 3 4	Direct	142·66	254·28	3·84	138·82			
	Inverted	149·50	255·46	4·90		154·40	139·27	146·83
	Direct	145·78	256·74	6·05	139·73			
Aug. 3 7	Direct	157·15	267·80	15·97	141·18			
	Inverted	136·95	268·38	16·49		153·44	141·24	147·34
	Direct	157·38	267·92	16·07	141·31		153·01	147·16
	Inverted	137·51	266·81	15·08		152·59	141·00	146·80
	Direct	155·88	266·93	15·19	140·69			

The mean reading of the short scale for the magnetic axis = 147·11.

Corrections to be applied to the Scale Readings at the Magnetic Axis of the Declination Magnets, in order to obtain the zeros of the scales.

11. Correction for the effects of the bifilar and balance magnets on the readings of the declination magnet.

The effect of the bifilar magnet (by Table 5. of the Introduction to the Observations for 1841 and 1842, north end west) = − 0·64 long scale divisions.

Sept. 4. 1843, and Jan. 25. 1844. The balance magnet was removed for the purpose of determining its temperature co-efficient. Its effect (north end east) was found = + 0·79 and + 0·80 long scale divisions, on the respective occasions.

The adopted effect of both magnets, and, therefore, the correction of the scale reading at the magnetic axis for the zero, = + 0·16 long scale divisions, or + 0·14 short scale divisions.

12. Correction for the effect of the copper ring or damper.

In 1843 many series of observations were made in order to determine this correction; the reading of the declination magnet was observed with the copper ring in its place, and when removed from the box. The results were contradictory, being, for the effect of the copper ring, from – 1·82 to + 1·89 long scale divisions, and led to the belief that the effect was small, if anything: the differences in the results, it was presumed, were due to the currents of air generated in lifting and shutting the box, to the changes of declination occurring at the time, and to the greatly increasing arc of vibration when the ring was removed. In July 1843, after an extra declinometer was obtained (§ 4), the results were equally contradictory, the differences being attributed to aërial currents, as before. The result of the best observations being nearly zero, the ring was therefore allowed to remain.

Oct. 7. 1844. Careful series of observations were made, every precaution was taken, with the aid of the *double* boxes, to prevent internal currents of air, and the position of the ring on the marble slab was marked, so that it occupied exactly the same place after each removal. It is conceived that it was owing to a failure in the latter precaution that many of the irregularities of the previous results were due. In the following series, each of the declinometer and unifilar readings is a mean of two or three series of comparative observations, the series being made at intervals of about ten minutes.

TABLE 5.—Observations to determine the effect of the Copper Ring or Damper on the Long Scale Readings of the Declination Magnet.

Copper Ring on or away.	Declinometer Reading.	Unifilar reading, *minus* 130 Sc. Div., reduced to Declinometer = *u*.	Declinometer *minus u*.	Means of two *on*, and of two *away*.	Effect of Copper Ring.
	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.
On	275·52	9·51	266·01		
Away	274·63	7·38	267·25	265·70	– 1·55
On	271·16	5·76	265·40	267·35	– 1·95
Away	271·63	4·18	267·45	265·74	– 1·71
On	267·45	1·37	266·08	267·50	– 1·42
Away	271·56	4·02	267·54	265·96	– 1·58
On	269·02	3·18	265·84	267·50	– 1·66
Away	270·62	3·16	267·46	265·60	– 1·86
On	269·72	4·36	265·36	267·27	– 1·91
Away	273·38	6·30	267·08	265·23	– 1·85
On	271·67	6·57	265·10		

The mean of the partial results for the position of the ring during these observations = – 1·7 long scale divisions. The position of the ring in this case, however, differed slightly from that which it was conceived the ring occupied previously; and it should be remarked that when any cause (such as elimination of the torsion of the suspension thread) rendered it necessary to remove the ring, it was replaced, by means of marks on the marble slab, very nearly in the same position. After the above series of observations, the ring was moved till its north end was 5° to the east, and its south end was 5° to the west of its usual position, when the effect of the ring was found = + 4·2 long scale divisions.

Oct. 15. 1844. Observations were made with the ring in its usual position, and in the position occupied during the series of observations in Table 5, when the effect in the latter position, compared with that in the usual position, was found = − 0·8 long scale division, so that the effect of the copper ring in its usual position would = − 0·9 scale division. A single comparison with the ring in its usual position and away, gave the effect = − 1·4.

13. The adopted effect of the copper ring during 1843 = − 1·0 long scale division.

As the effect of the ring varied with its position, if its position remained constant it would also vary with the changing declination. When the westerly declination diminished, the negative effect of the copper ring would be increased, and *vice versa;* but this variation would be inconsiderable for the ordinary diurnal changes.

14. Correction for the effect of the non-parallelism of the plates of glass in the declinometer boxes.

The magnet being caused to rest on wooden blocks, the scale readings were observed with the glass in its usual position, reversed, and away, but no difference in the readings could be detected; the effect is therefore zero.

15. Correction for the torsion force of the suspension thread, and the principal facts relating to the latter.

The errors due to the torsion force of the suspension thread are produced, first, by the magnet moving out of the plane of detorsion; secondly, by the variation of this plane (due generally to the varying humidity of the atmosphere).* The error due to the former, even in the most marked case, is less than the probable error of observations, and it is altogether inappreciable compared with the error due to the second.

If the plane of detorsion be that of the magnetic meridian, and the magnet be deflected through the arc u by turning the arms of the torsion circle w, the torsion is $w - u$, and the ratio

$$\frac{u}{w-u} = \frac{\text{torsion force for an arc = radius}}{\text{earth's mag. force} \times \text{mag. moment of the bar}} = \frac{\text{H}}{\text{F}}\dagger$$

---

* This source of error was removed to a considerable extent in January 1844, by placing a thick cotton cover over the whole declinometer.

† The symbols used in the "Report of the Committee of Physics and Meteorology of the Royal Society," and by Dr H. LLOYD, are generally adopted in this volume.

is the quantity by which the deviations of the magnet from the plane of detorsion should be multiplied, to obtain the decrements due to torsion. If n be the observed deviation, $\left(1+\frac{H}{F}\right) n =$ the true deviation. Following are the observations for the value of $\frac{H}{F}$; no use has been made of them for this correction.

Jan. 13ᵈ 2ʰ, 1843. $\text{Arc}^{-1}\, w = \begin{cases} +90^\circ \\ -90^\circ \end{cases}$; $\text{arc}^{-1}\, u = \begin{cases} 8'\cdot20 \\ 8'\cdot44 \end{cases}$; mean value of $\frac{H}{F} = 0\cdot00154$.

Aug. 7ᵈ 2ʰ, ... $\text{Arc}^{-1}\, w = \begin{cases} +90^\circ \\ -90^\circ \end{cases}$; $\text{arc}^{-1}\, u = \begin{cases} 7'\cdot97 \\ 7'\cdot90 \end{cases}$; mean value of $\frac{H}{F} = 0\cdot00147$.

16. The second and most important error due to the torsion force is that produced by the varying plane of detorsion. Unless when the period and extent of change is known, it can only be corrected practically. This is done occasionally in the following manner :—The magnet being removed, a brass bar of nearly the same dimensions and weight being suspended, and the box being completely closed, the extremities of the arc of vibration are observed through the glazed lid. The marble slab beneath having radii drawn for every 5° on each side of the magnetic meridian, the position of rest being estimated, its deviation from the magnetic meridian is known, and the arms of the torsion circle are turned an equal amount in the opposite direction. Much care and time were bestowed on these observations, the extremities of at least two vibrations being observed, so that the torsion might be as completely eliminated as possible. Some annoyance was experienced by the breaking of the suspension thread, which was formed of 20 fibres of untwisted silk. The necessity of removing the magnet for the purpose of eliminating the torsion, was, it is believed, occasionally a source of it, owing to the difficulty of holding the thread with a force exactly equal to the weight of the magnet till the suspension of the brass bar, and the consequent liability to strain, or by loosening, to alter the disposition of the fibres; but much graver errors would have been introduced by leaving the magnet wholly untouched.

17. The principal facts relating to the suspension thread.

Jan. 2ᵈ 21ʰ. 1843. The plane of detorsion was found + 26° from the magnetic meridian (reckoning deviations to the east of the magnetic north positive). This change, since December 20. 1842, it is probable, was produced in taking out the magnet and inserting the brass bar, as it was found that a fibre of the suspension thread was then broken; another fibre was probably broken on again inserting the magnet, as on

Jan. 6. 1843, the error of the plane of detorsion was found + 30°; the broken fibres were withdrawn on Jan. 13, and the torsion eliminated.

May 26ᵈ 3ʰ. Two fibres of the suspension thread were found broken; the torsion was eliminated.

June 16ᵈ 2ʰ. Three fibres of the suspension thread were found broken; all the broken fibres were removed from the thread, and the torsion was eliminated.

June 22^d 9^h 5^m. About the termination of the term observations it was discovered that three fibres of the suspension thread were broken; when the box covers were removed, the stirrup of the magnet was found resting on the copper ring. The observations for some time before this was noticed were found valueless; and it is probable that they were affected by a varying torsion force throughout the day.

June 22^d 22^h. While taking out the magnet and suspending the brass bar, the suspension thread broke fibre by fibre. A new suspension thread was prepared a week ago in the following manner:—A quantity of the compound silk fibre, about 23 times the length of the desired suspension thread, was run several times from one extremity to the other, between the thumb and index, until almost all the twist which the fibres receive in reeling was removed;* the fibre was then wound side by side round two pins, placed at the required distance in such a manner that no twist was introduced in the winding; a weight was then suspended by the lower extremity of the loop thus formed, so as to allow the fibres to take the same length, the torsion was so small that the weight did not revolve above 180°. After hanging thus for a week, the thread was to-day placed in the declinometer, great care being taken in pegging the extremity, and in winding up to keep the fibres in their respective positions; this thread was not tied throughout its length, as in the previous case several of the breaks were observed to occur at one of the lower ties.

June 29. It was found that several trials gave different positions for the plane of detorsion.

June 29^d 23^h. The plane of detorsion was found to have varied $-$ 74°; this was eliminated. The brass bar was then lifted two or three times, so as to loosen the fibres, after which the error of the plane of detorsion was found $-$ 26°; this was also eliminated, and the bar again lifted, when another trial gave the error of the plane of detorsion $-20\frac{1}{2}$°. After elimination the magnet was inserted. 30^d 3^h. The magnet being removed, and the brass bar inserted, the error of the plane of detorsion was found $+ 54\frac{1}{2}$°, which was eliminated. It was quite evident that the fibres took different relative positions too easily, so that, in exchanging the brass bar for the magnet, or *vice versa*, considerable torsion might be introduced. At 30^d 7^h, the thread was removed from the declinometer, and suspended on a pin, with the brass bar attached. When the latter came to rest, the thread was tied firmly (but not too tightly) at half-a-dozen places throughout its length with pieces of *cotton* thread; the suspension thread was then replaced in the instrument, and, after careful winding up, the torsion was eliminated. This thread, composed of 22 fibres, has answered well, improving as it got older. The greater changes of the plane of detorsion will be found generally connected with some cause stated in the notes to the Daily Observations of Magnetometers.

18. Accidental sources of error.

---

* The fibre is termed untwisted silk; it is not, however, free of twist, as a slight examination will shew.

March 29. 1843. A small magnet, intended to be placed in the brass bar to facilitate the determination of the plane of detorsion, but which was never used, was found in the writing-desk; the latter occupied a position to the east of the reading telescope of the declinometer, except on term-days, when, for convenience, it was moved to a position nearly midway between the declination and balance magnetometers. In the usual position of the desk, the greatest effect of the small magnet, on the reading of the declination magnet, might be from $-0'{\cdot}2$ to $+0'{\cdot}2$; and during term-days from $+1'{\cdot}1$ to $-1'{\cdot}1$. It is probable that the magnet remained in the same position in the desk, and, therefore, the effect would be constant for each position of the desk.

The large copper stove, occupying the position S in the plan, was removed early in 1844. Its effect was tried on the balance needle, by approaching and removing it, and was found to be nothing.

19. From Nos. (11) and (13) we find the following corrections to be applied to the scale readings at the magnetic axis of the declination magnet, in order to obtain the readings which shall be used as the zeros of the scales:—

Reading of the long scale at the magnetic axis, ...	257·14
Correction for the effect of the bifilar and balance magnet (11),	+ 0·16
Correction for the effect of the copper ring or damper (13),	− 1·00
Adopted zero for the long scale, ...	256·30
Reading of the short scale at the magnetic axis, ...	147·11
Correction for the effect of the bifilar and balance magnet (11),	+ 0·14
Correction for the effect of the copper ring or damper (13),	− 0·90
Adopted zero for the short scale, ...	146·35

20. Time of vibration of the declination magnet with the long scale.

The mean of 4 series of observations, given in the Introduction for 1841–2 (22), gives one vibration in 17$^{\mathrm{s}}$·84. The following series were made in 1843:—

	d. h.			s.
Feb.	28 0.	32 vibrations, the observations made at the extremities of the arcs, give a mean of		17·84
....		40	middle	17·84
March	1	32	extremities	17·81
....		32	middle	17·81
April	17 3.	22	extremities	17·93

The last series was not considered good; the mean of the first ten vibrations of the series gives 17$^{\mathrm{s}}$·85.

21. The observations of the declinometer are made in the following manner:— The points of the scale which coincide with the vertical wire of the reading tele-

scope are noted 18 seconds before the minute of observation, at the minute, and 18 seconds after the minute; the scale readings at these periods being *a*, *b*, and *c*, the mean is deduced by the formula $\frac{a+2\,b+c}{4}$.

22. All the observations of declination in this volume are absolute. They are rendered so as follows:—

The middle wire of the theodolite telescope is brought to coincide with the vertical wire of the fixed reading telescope (7); the three verniers of the horizontal circle are then read; the theodolite telescope is turned (on the vertical axis of the circle) until its middle wire coincides with the vertical line on the north meridian mark of Sir THOMAS BRISBANE'S (the western) transit in the Astronomical Observatory, and the verniers are again read.

In order to obtain the reading of the horizontal circle for the astronomical meridian, the theodolite telescope was placed as nearly as possible in the meridian, and being accurately levelled, the time of the sun's transit was observed by the Magnetic Observatory clock. The sun's meridian passage was also observed by Sir THOMAS BRISBANE with his western transit in the Astronomical Observatory, and the clocks in the two observatories being immediately compared, the true time of transit by the clock in the Magnetic Observatory was obtained. The difference, if any, between the true and observed times, was due to error of azimuth; the latter, being very small, was obtained from the former in multiplying by the factor,

$$\frac{\text{cosine sun's declination}}{\text{cosine sun's altitude}}.$$

23. If A′ be the difference of the horizontal circle readings for the fixed telescope and for the north mark, Z be the azimuth of the north mark, and D be the angle at any instant contained by the line of collimation of the reading telescope and the adopted zero scale reading, the true westerly declination at that time will be

$$180^\circ - A' + Z \pm D.$$

The values of $180^\circ - A' = A$, obtained in 1843, are given in the following Table:—

TABLE 6.—Determinations of the Value of Angle A.

Date.	Readings of Horizontal Circle								Angle A.
	For Declination Telescope.				For North Mark.				
	Verniers.			Mean.	Verniers.			Mean.	
	A.	B.	C.		A.	B.	C.		
1843.	′ ″	′ ″	′ ″	° ′ ″	′ ″	′ ″	′ ″	° ′ ″	° ′ ″
Jan. 18	52 5·0	52 10·0	52 55·0	233 52 23·3	42 52·5	42 17·5	42 32·5	77 42 34·2	23 50 10·9
Mar. 11	52 10·0	52 12·5	53 0·0	233 52 27·5	42 42·5	42 30·0	42 10·0	77 42 27·5	23 50 0·0
June 3	52 0·0	51 57·5	52 45·0	233 52 14·2	42 37·5	42 3·5	42 20·0	77 42 20·3	23 50 6·1
June 3	52 1·2	51 57·5	52 45·0	233 52 14·6	42 32·5	42 0·0	42 15·0	77 42 15·8	23 50 1·2
June 29	52 2·5	52 2·5	52 50·0	233 52 18·3	42 45·0	42 12·5	42 35·0	77 42 30·8	23 50 12·5
July 27	51 52·5	51 57·5	52 45·0	233 52 11·7	42 30·0	42 2·5	42 15·0	77 42 15·8	23 50 4·1
Sept. 23	52 10·0	52 10·0	52 56·0	233 52 25·3	42 57·5	42 20·0	42 40·0	77 42 39·2	23 50 13·9
Sept. 29	52 40·0	52 45·0	53 33·5	233 52 59·5	43 15·0	42 41·5	43 50·0	77 43 15·5	23 50 16·0
Nov. 6	53 17·5	52 57·5	53 16·0	53 53 10·3	42 55·0	43 25·0	43 42·5	257 43 20·8	23 50 10·5

The mean value of angle A = 23° 50′ 8″·4.

The value of angle Z, by the observations, Table 8, Introduction 1841–2, = 1° 37′ 38″·8.

Whence A + Z = 25° 27′ 47″·2 = 25° 27′·79 (25° 27′·75 was used), which is the absolute westerly declination corresponding to the long scale reading (as corrected, No. 19.), 256·30, and to the short scale reading (as corrected, No. 19.) 146·35. For other scale readings, differing from these zeros by the angular quantity ± D, the declination is obtained as indicated above. Tables have been formed from the above, and the known angular values of the scale divisions (8.), by means of which the scale readings observed are at once converted into the absolute westerly declination.

§ 4. UNIFILAR MAGNETOMETER AND OBSERVATIONS OF THE ABSOLUTE HORIZONTAL INTENSITY OF THE EARTH'S MAGNETISM.

24. In the beginning of April 1843 two small wooden houses were erected about 19 yards to the north of the Magnetic Observatory; the larger of the houses contains the unifilar magnetometer and the dip circle, and the smaller, which is 10 feet to SSE. of the larger, contains a reading telescope for the magnetometer. The instruments were in their positions in June, and the first observation of the absolute horizontal intensity was made in August.

25. The unifilar magnetometer rests on a strongly braced wooden stand, which is fixed by copper battens and plaster of paris to a stone slab, resting on a stone

foundation separated from the floor; the top block of the stand, a solid piece of mahogany, carries a vertical box enclosing the suspension thread and supporting the torsion circle, this box is open on two opposite sides near the stand top; a horizontal box slides on the vertical one, and when close to the stand top the magnet is completely enclosed; an internal box was afterwards added, and all the precautions already indicated (6.) for the declinometer were taken. The magnet used when observations of absolute horizontal intensity were made was that usually in the declinometer, a spare magnet being fitted with a short scale (8.) was substituted for it; the telescope (that intended for a collimator to the bifilar) was placed in the smaller wooden house, on a stand in all respects similar to that for the unifilar: the two houses were connected, during observations, in the line of collimation of the telescope and magnet by a wooden tube blackened within. A beam of straight well seasoned fir, 11 feet long, 3¾ inches broad, and 1¾ inches thick, was placed on each side (outside) of the larger wooden house, in the line passing through the centre of the suspended magnet, and at right angles to the magnetic meridian; each beam was let into the tops of two strongly braced wooden trestles, 7 feet apart, which rested on wooden posts driven into the ground, and which were fixed to the latter by catch pins, allowing a slight adjustment for the distance of the beams from the magnet; the trestles and beams being removed after each observation. The beams were carefully divided with the aid of a brass standard yard made by Messrs TROUGHTON and SIMMS; the graduations were adjusted to their distance from the suspended magnet in the following manner:—a well seasoned fir rod, shod with brass at one extremity, and terminated at the other by a capstan-headed screw, by which the rod was accurately adjusted to a length of six feet, was passed through holes in the sides of the wooden house and unifilar box; the middle of the rod coinciding with the suspension thread, the catch pins of the trestles were then loosened or forced in till the extremities of the six feet rod coincided accurately with the division 3 feet on each beam. The deflecting magnet was adjusted to the graduations on the beams with the aid of a lens; in 1844 the graduations were marked on brass pin heads placed in the beams. The fixidity of the trestles was verified in general after each observation, and the accuracy of the graduations on the beams was verified usually before each observation.

26. The value of the absolute horizontal intensity is determined from the observations as follows:—if r be the distance at which the centre of the deflecting magnet is placed on the wooden beam (in the direction of the central line of the beams), and u be the corresponding angle through which the suspended magnet is deflected, then

$$\frac{m}{X} = \frac{1}{2} r^3 \tan u \; \frac{1}{1 + \frac{p'}{r^2} + \frac{q'}{r^4} + \&c.}$$

where m is the magnetic moment of the deflecting bar, X the absolute horizontal intensity in terms of the units used, and p' and q' quantities depending on the mode of distribution of magnetism in the magnets. The term tan u is obtained from the formula

$$\tan u = \tan \alpha^{*} \left\{ \frac{(\overline{u_1 + {}_1u} - \overline{u_0 + {}_0u}) - f\,(\overline{d_1 + {}_1d} - \overline{d_0 + {}_0d})}{4} \right\} \left\{ 1 + \frac{H}{F} \right\} \left[1 + q\,(t_d - t_v) + k\,(b_r - 500) \right]$$

where u_1 and ${}_1u$ are the observed mean readings of the unifilar magnetometer, the deflecting bar, with its north pole towards the east, being at the distance r to the east and west respectively of the suspended magnet; similarly, u_0 and ${}_0u$ are the readings when the deflecting bar, at the distance r, has its north pole towards the west; d_1, ${}_1d$, &c. are the simultaneous readings of the declinometer corresponding to u_1, ${}_1u$, &c.; $f = 1{\cdot}115$ is the co-efficient for reducing the scale values of the declinometer to those of the unifilar; α is the angular value of one scale division of the unifilar; $\left(1 + \frac{H}{F}\right) = 1{\cdot}00212$ is the torsion factor; $q = 0{\cdot}000288$ the temperature co-efficient for the deflecting bar (60.); t_d and t_v its temperature at deflection for the distance r and for vibration, respectively; k the co-efficient for reducing the scale divisions of the bifilar magnetometer to parts of horizontal force; b_r the bifilar magnetometer mean scale reading during deflection at the distance r.

27. The comparative observations for u and d were rendered simultaneous, thus: The times of vibration of the unifilar and declination magnet being nearly the same, the time at which the unifilar magnet attained one extremity of its arc of vibration was instantly indicated by me to Mr WELSH, who could observe my motions through one of the north windows of the Observatory. He immediately commenced counting the beats of the mean time clock, and at the end of the 18th second (the time of one vibration) both observers commenced making readings of the magnetometers; those by Mr WELSH being made at the end of the 18th, 36th, 54th, &c., seconds, and those by myself at the extremities of the arcs of vibration. From 7 to 12 consecutive readings were made thus at every position of the deflecting bar, and from these the mean readings are deduced. In order to render the arcs of vibration of the unifilar as small as possible, the deflecting bar was at first moved gradually up to its nearest distance (5 feet); in placing it at the next distance, it was moved rapidly *nearly* half way, and 18 seconds counted, when it was immediately shifted to the other half. When the farthest distance was attained, it was placed vertically, and after 18 seconds, laid down in the reverse position; it was then moved as before, by half-shifts, to its next position, and so up to the nearest. After comparative readings for that position, the magnet was again placed vertically, and carried to the beam on the opposite side of the suspended magnet; at the end of 36 seconds

---

[*] The formula actually used was tan $\{\alpha\,(u_1 + \&c.)\}$, as it was considered more convenient and sufficiently exact for such small deflections, especially when the method of determining α was taken into consideration. (See note to No. 8.)

it was laid down at the same distance, and with the north pole in the same direction as before. In general, the vibrations were small, seldom above 10′; when larger, it was checked by slightly approaching or removing the deflecting bar at proper times, with reference to the directions in which the suspended magnet was moving. Mr **WELSH** observed the bifilar magnetometer before and after each comparison, and I observed the temperature of the deflecting bar after each comparison by means of a thermometer lying beside it.*

28. After the deflection observations, the deflecting bar was vibrated in the declinometer box; it was suspended in a stirrup of silk of the same kind as that of the suspension thread, a small slip of paper was gummed to the extremity next the telescope, and the transits of the slip were observed.

The following equation is then obtained :—

$$m\,X = \frac{K\,\pi^2}{T^2}\left\{1 + k\,(b - 500)\right\}$$

where K is the moment of inertia of the magnet $= \frac{a^2 + b^2}{12}$ M, a being the length of the magnet = 1·25 feet, b the breadth = 0·0719 feet, M the mass = 6216·7 grains. π, the ratio of the circumference to the diameter = 3·1416, T, the true time of observation $= T'\left(1 + \frac{H}{2\,F} - \frac{a\,a'}{16}\right)$; T′ being the observed time of one vibration, $\frac{H}{F}$ as already defined (15.) and determined from the value 0·001465 for the declination magnet thus; the moments of the declination magnet and deflecting bar are as $\frac{1\cdot000}{0\cdot942}$, the value of $\frac{H}{F}$ for the deflecting bar is therefore $= \frac{0\cdot001465}{0\cdot942} = 0\cdot0015562$, a and a' are the semiarcs of vibration at the commencement and termination of the observations of vibration. The factor $\{1 + k\,(b - 500)\}$ is the reduction of the value of X to the bifilar reading 500, b being the mean bifilar reading during vibrations.

The temperature of the bar during vibrations is observed, and the value of m is reduced to this temperature in the formula for deflections.

29. Observations of deflection were made on August 12 and 21, November 8 and 14, and on December 18. The observations on August 21 and November 8 were reduced by the method of least squares, the equations of condition having the form

$$-1 + \frac{p}{r^2} + \frac{q}{r^4} + \frac{1}{\frac{1}{2}\,r^3 \tan u} \cdot \frac{m}{X} = 0$$

---

* It was soon found that good observations could only be obtained on cloudy days, as the sun heated the building on cloudless days to such an extent as to produce internal aërial currents. On account of the manipulations with the deflecting bar being performed outside, rainy days would not do, and it was found desirable that the days should be calm; independently, then, of the necessity for a magnetic calm, there was requisite for a good observation a day cloudy, dry, and calm.

The following Table contains the results of the equations for the different values of *r*.

$$\text{Aug. } 21,\ \frac{m}{X}=2{\cdot}88977\ ;\ p=-0{\cdot}1325\ ;\ q=-1{\cdot}0574.$$

$$\text{Nov. } 8,\ \frac{m}{X}=2{\cdot}90250\ ;\ p=-0{\cdot}1013\ ;\ q=-2{\cdot}8539.$$

TABLE 7.—Results of the Equations of Condition.

r.	August 21.	November 8.
	Results.	Results.
Feet.		
5·00	+0·000002	−0·000051
5·25		+0·000359
5·50	+0·000163	−0·000275
6·00	−0·000786	−0·000495
6·50	−0·000610	+0·000144
7·00	−0·000091	+0·001098
7·50	−0·000556	−0·000788
8·00	+0·002780	
8·50	+0·000631	
9·00	−0·001908	
9·50	−0·000333	

30. The mean of the above values of *p* and *q* were applied to the equations for August 12, November 14, and December 18;[*] on the first of these days deflections were made at three distances, and on the other two at four distances. The results of the equations are as follow:

TABLE 8.—Results of the Equations for August 12, November 14, and December 18.

August 12.		November 14.		December 18.	
r.	$\frac{m}{X}$	*r*.	$\frac{m}{X}$	*r*.	$\frac{m}{X}$
Feet.		Feet.		Feet.	
5·000	2·8878	5·125	2·8701	5·000	2·8890
5·500	2·8906	5·250	2·8662	5·250	2·8738
6·500	2·9005	6·750	2·8677	6·625	2·8676
		7·000	2·8688	7·000	2·8745
Mean	2·8928	Mean	2·8682	Mean	2·8762

---

[*] This method was recommended by Mr AIRY (Proceedings of the Committee of Physics of the Royal Society, No. 1.) The results for Nov. 14 and Dec. 18, by the approximate formula (31.), shew to some extent how far it may be depended on. It should be remembered that the magnet was subjected to temperature experiments between Nov. 8th and 14th.

31. The observations, November 14 and December 18, have also been computed by the approximate formula in which q' is neglected and p' eliminated, namely,

$$\frac{m}{\mathrm{X}} = \frac{r_1^5 \tan u_1 - r^5 \tan u}{2\,(r_1^2 - r^2)}$$

the results are as follow:

$$\text{Nov. 14.}\quad \left.\begin{array}{l} r_1 = 5{\cdot}125 \text{ feet},\ r = 6{\cdot}750 \text{ feet};\ \dfrac{m}{\mathrm{X}} = 2{\cdot}8762 \\ r_1 = 5{\cdot}250 \text{ feet},\ r = 7{\cdot}000 \text{ feet};\ \dfrac{m}{\mathrm{X}} = 2{\cdot}8691 \end{array}\right\} \text{Mean } \frac{m}{\mathrm{X}} = 2{\cdot}8726$$

$$\text{Dec. 18.}\quad \left.\begin{array}{l} r_1 = 5{\cdot}000 \text{ feet},\ r = 6{\cdot}625 \text{ feet};\ \dfrac{m}{\mathrm{X}} = 2{\cdot}8444 \\ r_1 = 5{\cdot}250 \text{ feet},\ r = 7{\cdot}000 \text{ feet};\ \dfrac{m}{\mathrm{X}} = 2{\cdot}8795 \end{array}\right\} \text{Mean } \frac{m}{\mathrm{X}} = 2{\cdot}8619$$

32. The following Table contains the values of $\frac{m}{\mathrm{X}}$, of $m\,\mathrm{X}$ obtained by the formula, No. 28, from the Observations, pages 83 and 84, and the consequent values of m and X, together with the weight of the final results deduced from the formula

$$\text{Weight} = \frac{\text{Number of partial results}}{\text{Mean of the squares of the partial results } \textit{minus} \text{ the square of the mean}}.$$

TABLE 9.—Results of the observations for the Absolute Horizontal Intensity, reduced to the Bifilar Magnetometer reading 500.

Date.	Number of Results.	Temperature of Deflecting Magnet.	$\frac{m}{\mathrm{X}}$	$m\,\mathrm{X}$.	m.	X.	Weight.
		°					
Aug. 12	3	69·6	2·8928	33·2505	9·8075	3·3903	102
Aug. 21	10	61·1	2·8898	33·4536	9·8322	3·4024	7599
Nov. 8	7	43·3	2·9025	33·4698	9·8563	3·3958	21308
Nov. 14	4	41·1	2·8682	33·1440	9·7501	3·3993	1947
Dec. 18	4	46·3	2·8762	33·1695	9·7675	3·3959	65
			Results from the approximate formula.				
Nov. 14	2	41·1	2·8726	33·1440	9·7576	3·3967	
Dec. 18	2	46·3	2·8619	33·1695	9·7431	3·4044	

Giving the determinations of X, values corresponding to their weights, the resulting value is

$$\mathrm{X} = 3{\cdot}39762$$

the bifilar magnetometer reading 500 scale divisions.

§ 5. BIFILAR OR HORIZONTAL FORCE MAGNETOMETER.

33. This instrument was made by GRUBB of Dublin, and is similar, in its general construction, to the declinometer. An inner box was applied on September 26, 1843; both boxes were gilt, externally and internally, and their joints covered with velvet. The magnet, whose dimensions are 15 inches, $\frac{7}{8}$ inch and $\frac{1}{4}$ inch, is placed in a stirrup, which carries below it a lens and glass scale connected by a tube; the glass scale has 280 divisions, and the graduation at the 300th division, and increasing readings indicate increasing force; the axle of a grooved wheel fits into the suspension eyes of the stirrup, the whole being borne by a silver wire passing round the grooved wheel, and having its two extremities fixed to a suspension roller; the roller is supported by the torsion circle, which also bears beneath the roller a micrometer-headed screw, right-handed where it meets one wire (or portion of the wire), and left-handed where it meets the other. The screw serves to render the distance of the wires at the top equal to the distance at the grooved wheel. A copper ring encircles the magnet in order to check the vibrations. A thermometer by ROSS, with a bulb 0·5 inch in diameter, is inclosed in a glass tube, and is fitted into the lid of the magnetometer box, leaving the bulb below, and the stem and scale above. This thermometer was intended to give the temperature of the magnet, but it was evident (especially while the box was imperfectly closed) that the temperature of the bar and of the air might differ considerably. In order to avoid this source of error, I had a thermometer made by Messrs ADIE and SON, whose bulb rested in a cup, in a brass bar of the same dimensions as the magnet, and was covered loosely by a small brass cap. The following comparisons were made of the indications of the two thermometers, the box being in its original state, and the rise of the temperature considerable. From these comparisons, the necessity of some method which will give the temperature of the bar is at once obvious. As the thermometer by ADIE is only partially in contact with the metal, it may be considered more as an indication of the temperature of the surface than of the interior of the bar.

TABLE 10.—Comparisons of the Thermometers with the Bulb free, and with the Bulb in a brass bar.

Göttingen Mean Time.	Thermometer.		Difference.
	Ross.	Adie.	
1844.			
d. h.	°	°	°
Jan. 2 21	30·9	30·7	0·2
22	31·3	31·0	0·3
23	31·9	31·5	0·4
Jan. 3 0	33·9	33·0	0·9
1	38·9	37·6	1·3
2	42·3	41·0	1·3
3	44·7	43·0	1·7
4	45·6	44·0	1·6
5	45·9	44·5	1·4
6	46·0	44·9	1·1
7	46·1	45·0	1·1
8	45·9	44·9	1·0
11	45·0	44·3	0·7

34. In the adjustment of the instrument, the magnet is forced to a position at right angles to the magnetic meridian, by turning the arms of the torsion circle. As, in forcing the magnet from the meridian, the upper extremities of the wire will move through a greater angle than the lower extremities, the wires will be no longer vertical, and the magnet and appendages will be raised; the forces producing equilibrium will, therefore, be the weight suspended endeavouring to attain the lowest point, and the horizontal component of the earth's magnetic intensity acting on the free magnetism of the bar.

35. If v be the excess of the angular motion of the arms of the torsion circle, or upper extremities of the wire, over u, that of the lower extremity or magnetic bar in moving the latter from the meridian, the equation of equilibrium will be

$$m \mathrm{X} \sin u = \mathrm{W} \frac{a^2}{l} \sin v.$$

m, X, W, a, and l being respectively the magnetic moment of the bar, the horizontal component of the earth's magnetic force, the weight suspended, the interval, and the length of the wires. The differential of this equation ($u = 90°$) divided by it, gives

$$\frac{\Delta \mathrm{X}}{\mathrm{X}} = n\,a \cot v + t\,(\mathrm{Q} + 2e - e')$$

n being the number of scale divisions from the zero, or scale reading when $u = 90°$, a the arc value in parts of radius of one scale division, t the number of degrees Fahrenheit which the temperature of the magnet is above the adopted zero, Q the coefficient of the temperature correction for the varying magnetic moment of the bar or the value of $\frac{\Delta m}{m}$ for 1° Fahr., e and e' the coefficients of expansion for the brass of the grooved wheel and silver of the wires.

36. The observations in this volume are given in scale divisions, and are corrected by the coefficient $\frac{q}{a \cot v}=\frac{q}{k}$, q being the total temperature coefficient; the abstracts are then obtained from the formula $\frac{\Delta \mathrm{X}}{\mathrm{X}} = n\, a \cot v$ where n is the number of scale divisions corrected for temperature as above.

37. The following are the adjustments and values of the constants.

The angular value of one scale division of the bifilar magnetometer = 1′·1223 (See Table 10, Introduction, 1841–2); increasing readings indicate increasing force. The value of q, the *total* coefficient of the temperature correction, = 0·000247 (71.)

38. It having been suspected that the zero of the scale (the scale reading when u=90°) had altered in some way since last adjustment on Oct. 20. 1841 (Introduction, 1841-2, p. xxviii.), the following observations were made

April 27^d 2^h 39^m. Bifilar scale reading 196·9. 2^h 44^m. Bifilar scale reading 196·6; the magnet was then removed carefully, and the equivalent brass weight substituted. The torsion circle was then turned from the reading vernier A 289° 10′ to A 358° 16′, or through 69° 6′, the previous value of v (Introduction, 1841-2, p. xxviii.), when the scale should have read 150, instead of which it read 212·2. As it seemed possible that this difference might be due to pressure exerted on the wires in withdrawing the magnet and substituting the weight, the magnet was again inserted in the stirrup, the weight being removed, and the torsion circle turned till it read A 289° 10′, when the scale read 297. It was therefore evident that the previous difference might be due in some way to the manipulation it was necessary, however, to go through the adjustment anew.

After several trials the scale reading was found to read the same whether the brass weight or magnet was suspended, when the torsion circle read A 87° 30′. The weight being suspended, the torsion circle was turned 90°, when it read A 357° 30′. The collimator was then turned by its independent motion till the scale read 200. The magnet being again suspended, the scale reading was found 200 when the torsion circle was turned 69° 45′, it then read A 287° 45′.

April 28^d 0^h 20^m. As the zero of the scale, 200, was taken too high, the adjustment was again performed.

Bifilar scale reading 200. The magnet being withdrawn, the brass weight suspended, and the arms of the torsion circle turned from A 287° 45′ to A 357° 30′, the scale reading was found 199, so that the wires had not been affected in the previous adjustment. The collimator was then turned till the scale read 148, this being the mean of several readings; the magnet was again suspended, and the torsion circle turned through 69° 44′, reading A 287° 44′, the scale reading being 148. The westerly declination during adjustment was 25° 28′.

November 8^d 21^h 20^m. The bifilar magnet was removed in order to determine its temperature correction; the brass weight being substituted, the arms of the torsion circle were turned from A 287° 44′ to A 357° 30′, when the collimator scale read 157·5, or 9·5 scale divisions greater than on April 28, the westerly declination being 25° 20′. As it is necessary to determine the changes of horizontal force during the observations for the temperature correction, the magnet used for deflections in observations of absolute horizontal intensity was substituted. The moment of this bar was found too great for grooved wheel No. 8, previously in use (Introduction, 1841-2. 30.), wheel No. 9 was substituted, whose diameter = 0·459 inch; as the diameter of wheel No. 8 = 0·409 inch, and the value of one division of the micrometer-headed screw = 0·0005194 inch, the wires were rendered parallel by turning the micrometer head through 96 divisions.

The brass weight being suspended, the scale reading was	128·5
The magnet	126·0

The weight being suspended, the arms of the torsion circle were turned through 90°, when it read, vernier A 178° 0′, B 358° 0′; the collimator was then turned by its independent motion till the scale reading was 143; the magnet was suspended, and the scale reading was found 142 when the arms of the torsion circle were turned through 55° 17′·5, the circle reading A 122° 41′·5, B 302° 43′.

November 10^d 6^h. The temperature experiments having been made, the deflecting bar in the bifilar magnetometer was removed, and the arms of the torsion circle were turned from B 302° 43′ to B 358° nearly, when the scale reading was 143, as in the previous adjustment. Wheel No. 9 was removed, and No. 8 substituted, the micrometer head being turned backwards through 96 divisions.

The bifilar magnet being suspended, the scale reading was	93
The brass weight	96

the arms of the torsion circle were turned through 90°, when the reading was B 358° 35′; the collimator was turned by its independent motion till the scale reading was 172·4, the magnet was inserted and the arms of the torsion circle turned through 68° 18′, when the torsion circle reading was B 290° 17′, and the scale reading 173°. The bifilar thermometer 42°·4, and the absolute westerly declination 25° 18′.

39. The following are the values of v, of $k = a \cot v$, and of $q' = \frac{q}{k}$, with the periods to which they apply in 1843.

TABLE 11.—Values of v, k, and q, in 1843.

Periods to which the Values apply.	v.	k.	q'.
d. h. d. h.	° ′		Sc. Div.
Jan. 1 —April 27 4	69 6	0·0001248	1·98
April 28 2—Nov. 8 22	69 46	0·0001205	2·05
Nov. 9 0—Nov. 10 6	55 18	0·0002263	1·10
Nov. 10 8—Dec. 31	68 18	0·0001300	1·90

The values of k are given at the foot of each page of the magnetical observations.

40. During considerable disturbances the collimator scale, which contains too small an angle, goes out of the field of the reading telescope, and it has been found necessary to turn the arms of the torsion circle until it again appears; without this, it has happened that the greater part of a disturbance could not have been observed. As there was some doubt that turning the arms of the torsion circle after adjustment might affect the instrument injuriously, experiments were made in the end of 1842, during periods of slight change, which shewed, after turning the arms of the torsion circle a few degrees in either direction, that on recurring to the original value of v the scale readings were unaltered.

41. In turning the arms of the torsion circle the value of the scale divisions and the unit of force are changed, it is necessary therefore to reduce the observations to a common unit and zero; let β be the small angle through which the arms of the torsion circle are turned, $v' = v + \beta$, $m\,X = F$, $W\frac{a^2}{l} = G$, (34.) The equation of equilibrium originally, $u = 90°$, is

$$F = G \sin v, \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1.)$$

for the new value of v, $u = 90 + \Delta u = 90 + \Delta v'$ where $\Delta v =$ the angular value of the scale reading at any instant from the zero reading

$$F' = \frac{G \sin (v' + \Delta v')}{\cos \Delta v'} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2.)$$

Subtracting (1.) from (2.), and dividing by (1.),

$$\frac{F' - F}{F} = \frac{\Delta F}{F} = \frac{\sin v' - \sin v}{\sin v} + \frac{\cos v'}{\sin v} \Delta v'$$

If n be the number of scale divisions from the zero or scale reading for $u = 90°$, when $v' = v + \beta$; and N be the number of scale divisions corrected for temperature from the zero corresponding to the same force when $\beta = 0$, then

$$N = \frac{\sin v' - \sin v}{a \cos v} + n \frac{\cos v'}{\cos v} + t\,q'$$

or adapting the first constant to logarithmic computation

$$N = \frac{2\sin\frac{\beta}{2}}{a\cos v}\cos\left(v+\frac{\beta}{2}\right) + n\frac{\cos(v+\beta)}{\cos v} + t\,q'$$
$$= \qquad A \qquad\qquad + n\,B \qquad\qquad + t\,q'$$

β is considered negative when v is diminished, n is negative when the reading is below the zero, and t is the temperature of the magnet *minus* 26°.

42. It was necessary to turn the arms of the torsion circle once only in 1843, namely, on

May 6^d 10^h 45^m, when vernier B was turned from 287° 44′ to 291° 45′, whence $\beta = -4°\ 1'$, A=234·7 scale divisions, B=1·19, v being=69° 46′.

May 6^d 13^h 45^m, the arms of the torsion circle were turned from B 291° 45′ to B 287° 41′, as this was 3′ different from the original reading, 3 scale divisions were subtracted from the abstracts of the observations from April 28^d 2^h till May 6^d 10^h, the two hourly and extra observations are, however, affected to that amount.

43. The effect of the balance needle upon the readings of the bifilar was determined, September 4^d 1843, to be −4·03 scale divisions; no correction has been applied; the effect of the declination magnet is zero, and the effect of the copper ring or damper has not been determined, but it is supposed to be small.

44. Time of vibration of the bifilar magnet.

			s.
Feb.	22.	Mean of 38 vibrations, 1 vibration =	26·18
March	1.	Mean of 28 vibrations, 1 vibration =	26·25
June	1.	Mean of 27 vibrations, 1 vibration =	27·08
Oct.	25.	Mean of 8 vibrations, 1 vibration =	26·99
Oct.	25.	Another series, . . .	27·03

45. The natural arc of vibration is generally very small, and when considerable the time of vibration is found different from that determined by artificial vibrations (Introd. 1841-2, p. xxix), namely, about 25 seconds, which has been used in the observations. The observations are made as follows:—the point of the scale coinciding with the vertical wire of the fixed telescope is estimated to a tenth of a division at 25^s before the minute of observation, at the minute, and 25^s after it; the mean reading is deduced from the three readings by the formula $\frac{a+2b+c}{4}$, a, b, and c being the three readings. The mean thus obtained is corrected to the temperature of 26° Fahr., this being below the lowest temperature which occurred within the Observatory in 1843; a constant quantity of 300·0 has been added to all the corrected means. Tables were formed giving the temperature correction for every tenth of a degree above 26° from the formula $(t-26)\,q' + 300{\cdot}0$.

46. The temperature of the magnet was obtained till November 27^d 18^h from the thermometer by ROSS, after that time from the thermometer by Messrs ADIE

and SON resting on a brass bar. From September 26^d till November 27^d the temperature of the magnet was probably worse determined than at any other time, as the bulb of the thermometer by ROSS was outside of the *inner* box, while the magnet was within it. December 14^d 1^h, the inner box was removed in order to compare the indications of the thermometers of ROSS and ADIE; it was not replaced till January 10^d 3^h 1844.

§ 6. BALANCE OR VERTICAL FORCE MAGNETOMETER.

47. The balance magnetometer was made by ROBINSON of London. It is composed of a needle 12 inches long, and about $\frac{3}{4}$ inch broad, with knife-edged axle resting on agate planes; at the extremities of the needle are brass rings, each carrying a cross of spider threads. The needle is placed horizontally at right angles to the magnetic meridian; it is accurately adjusted by means of two fine brass screws; one towards one extremity, working horizontally, balances the needle; the other, working vertically near the other extremity, regulates its sensibility. The apparatus is covered by a rectangular box, having glazed openings on two sides opposite the spider's crosses; those on one side allowing light to be thrown on the crosses from two small mirrors; those on the other for viewing them and determining their position, which is done accurately by means of microscopes carrying micrometers. A thermometer within the box gives the temperature of the needle.

48. If m be the moment of free magnetism of the needle, Y the vertical component of the earth's magnetic force, W the weight of the needle, g the distance from the centre of motion to the centre of gravity, ϵ the angle contained by the line joining these two centres and the magnetic axis of the needle, the latter being horizontal, the equation of equilibrium is

$$m\,\mathrm{Y} = \mathrm{W}\,g \cos \epsilon$$

differentiating this equation, dividing by it, and having regard to the sign of $\Delta\,\epsilon$, we have

$$\frac{\Delta\,\mathrm{Y}}{\mathrm{Y}} = \tan \epsilon \;\Delta\,\epsilon - \frac{\Delta\,m}{m}$$

the varying angle which the magnetic axis makes with the horizontal, $\Delta\,\epsilon$, is obtained from the micrometer observations. See the section on the temperature corrections for $\frac{\Delta\,m}{m}$.

49. It is conceived that ϵ cannot be determined with accuracy by the method of inversion, owing to mechanical difficulties in the formation of the axle, but Dr LLOYD has shewn* that if the needle be disturbed through a small angle η, the moment of the moving force brought into play by the disturbance is equal and opposite

---

* Account of the Magnetical Observatory of Dublin, p. 38.

to the change of the vertical component of the magnetic force, which would produce a disturbance $= \eta$, and hence he shews that the value of the constant $\tan \epsilon$ will be given by the formula

$$\frac{T'^2}{T^2} = \frac{\tan \epsilon \, Y}{X} = \tan \epsilon \cot \theta$$

Where θ is the magnetic dip, T′ and T the times of one vibration of the needle, the former in a horizontal plane, the latter in a vertical plane.

50. This method has been found to fail in practice; the determination of the time of vibration in a vertical plane has been proved to be a matter of much difficulty, if at all possible, mixed up, as it is, with several sources of error, which are not easily accounted for or eliminated.[*] It has been shewn with respect to the time of vibration in a vertical plane,

---

[*] The following statical method might be substituted for that of Dr LLOYD :—Let η be the small angle which the magnetic axis of the balance needle makes with the horizontal, then the equation of equilibrium is (48)

$$m \, Y \cos \eta = W g \cos (\epsilon + \eta) \quad . \; . \; . \; . \; . \; . \; . \; . \quad (1.)$$

if a magnet, whose moment is M, be placed vertically, with its centre at a distance r from the centre of the balance needle, and in the continuation of the magnetic axis of the balance needle when horizontal, the needle will then make an angle δ with the horizontal, and the equation of equilibrium will be

$$m \, Y' \cos \delta = W g \cos (\epsilon + \delta) \quad . \; . \; . \; . \; . \; . \; . \; . \quad (2.)$$

where

$$Y' = Y \mp \frac{c M}{r^3} \quad . \; . \; . \; . \; . \; . \; . \; . \; . \; . \quad (3.)$$

From equations (1), (2), and (3),

$$\frac{c M}{r^3 Y} = \frac{\tan \delta - \tan \eta}{\cot \epsilon - \tan \eta} \quad . \; . \; . \; . \; . \; . \; . \; . \; . \quad (4.)$$

Now, if X be the horizontal intensity of the earth's magnetism, and θ be the magnetic dip,

$$Y = X \tan \theta ; \quad . \; . \; . \; . \; . \; . \; . \; . \; . \; . \quad (5.)$$

and if the deflecting magnet be placed in the line at right angles to the magnetic meridian passing through the centre of a freely suspended magnet, and u be the angle of deflection when the centres of the magnets are at the distance r_1, then (No. 26.)

$$\frac{c M}{r^3 X} = \frac{1}{2} \frac{r_1^3}{r^3} \tan u \; . \; . \; . \; . \; . \; . \; . \; . \; . \quad (6.)$$

By equations (4), (5), and (6),

$$\tan \epsilon = \frac{\frac{r_1^3}{r^3} \tan u}{2 \tan \theta \, (\tan \delta - \tan \eta) - \tan u \tan \eta} = \frac{\frac{r_1^3}{r^3} \tan u}{2 \tan \theta \tan (\delta - \eta)}, \text{ approximately};$$

and if $\eta = 0$, or be very small, as it is in general, when the needle may be considered horizontal, then

$$\tan \epsilon = \frac{r_1^3 \tan u}{2 r^3 \tan \theta \tan \delta} \quad . \; . \; . \; . \; . \; . \; . \; . \; . \quad (7.)$$

If the deflecting magnet be placed at right angles to the suspended magnet (as in Dr LAMONT's method), then sin u must be substituted for tan u.

The

1st, That it is found increased after the needle has been vibrated by any means through a large arc (2° or 3°).

2d, That it depends to a considerable extent, much more than theory will account for, on the arc of vibration.

3d, That it is greater for the same arc, if it be deduced from a series commencing with a large arc, than if it be deduced from a series commencing with a small arc.

4th, That it depends on the temperature of the needle.

5th, That it does not vary appreciably with the changes of position of the needle, unless as co-existent (*4th*) with the changes in the position produced by temperature.*

It does not seem likely that the source of error indicated in the *4th* conclusion can be eliminated; any zero of temperature to which the times of vibration might be reduced would be altogether arbitrary. I have also found, since the above results were obtained,

6th, That the effect of one degree Fahrenheit on the time of vibration of the needle is variable, being sometimes as little as $0^{s}{\cdot}05$, at other times as much as $0^{s}{\cdot}10$.

51. The following method of determining the value of tan ϵ has been adopted for the reductions in the abstracts:—if q be the temperature co-efficient, or the value of $\frac{\Delta m}{m}$ for 1° Fahr., $k = a \tan \epsilon$, where $a =$ the arc value of one division of the micrometer head in parts of radius (52.), if it be assumed that the value of $\frac{q}{k}$ found, § 7, is dependent solely on the varying magnetism of the needle, or that the cause by which the time of vibration is affected has no effect on the position of the needle, assuming also that the value of q, determined by the usual method of deflections, is accurate, then by the latter (Introduction, 1841-2, p. xliv),

$$q = 0{\cdot}000073,$$

by the former (66.)

$$\frac{q}{k} = 7{\cdot}90,$$

whence

$$k = \frac{0{\cdot}000073}{7{\cdot}90} = 0{\cdot}0000092\,;\ 0{\cdot}000009 \text{ has been adopted.}$$

The mean value of the angle δ should be determined by placing the deflecting bar at the distance r on opposite sides of the balance needle, and if the needle be nearly horizontal, the deflecting bar should be inverted in each position.

This method has been tried since the previous portion of this note was written, and the mean of two results from deflections within the usual range of the instrument, which differ 0·0000003, gives

$$k = 0{\cdot}0000087,$$

very nearly the value obtained No. 51, and adopted in the results; larger deflections seem to give about 0·000008, but they have not yet been completely reduced. The accuracy of this method seems to depend almost wholly on the determination of δ, and it seems possible to obtain this certainly within 2′, or that the error of k may not be above 0·0000002.

* Transactions of the Royal Society of Edinburgh, vol. xvi., p. 67.

Values of the constants and adjustments.

52. Value of one division of the micrometer head in angular measure.

The micrometer heads have 50 divisions numbered at the tens 1, 2, 3, 4, 5, a brass needle with scales graduated to 10′, at an equal distance from the centre as the spider crosses in the magnet, was placed on the agate planes, and the moveable wires of the micrometer brought to coincide with the graduated lines of the scale, the micrometer heads being read at each coincidence.

			Left Mic.	Right Mic.
June 21. 1841	(Table 13, Introduction, 1841–2),	one division	= 0′·1004	0′·1003
Aug. 30. 1841	....	....	= 0′·1002	0′·0996
Sept. 4. 1843	Observations gave	....	= 0′·1012	
Nov. 13. 1843	....	....	= 0′·1013	0′·0999

Adopted mean value of one division, 0′·1003, whence

$$a = 0{\cdot}00002918,\ \epsilon = 17^\circ\ 34',\ k = 0{\cdot}000009$$

this value of k has been used in the abstracts.

53. Time of vibration in the horizontal plane.

The adopted mean of all the observations, Table 15, Introduction, 1841-2, is $12^{s}{\cdot}0$.

54. Time of vibration in the vertical plane.

The needle being in its usual position on the agate planes, the moveable wire of the left micrometer is made to bisect the spider cross; the needle is then vibrated, by means of a small piece of iron or steel, through an angle varying from 15′ to 5′, and the periods of the cross passing the wire are estimated. When large arcs of vibration have been taken, the time of vibration is deduced from the last observations of the series, for the reasons stated, No. 50, 2d. The 4th conclusion given, No. 50, cannot be deduced from the observations for 1843, probably because constant arcs of vibration were not used, and the errors indicated 1st, 2d, and 3d, being included in the results. The arc of vibration was estimated till October 18, after which the arc at commencing was measured by moving the wire of the right micrometer on the cross at the extremity of its arc of vibration; the arc of vibration at the end is generally about 1′, being the smallest possible at which the passage of the cross can be estimated with any nicety. The following is a specimen of the observations, and of the method in which the results in the following Table are obtained :—

TABLE 12.—Observations for the Time of Vibration of the Balance Needle in a Vertical Plane, November 24ᵈ 0ʰ, 1843.

Time of passing the fixed wire.		Time of 10 Vibrations.	
Cross rising.	Cross falling.	Cross rising.	Cross falling.
m. s.	m. s.	s.	s.
6 33·6	6 44·1		
54·8	7 5·4		
7 15·9	26·7		
8 19·0	8 30·0	105·4	105·9
40·0	51·3	105·2	105·9
9 1·0	9 12·0	105·1	105·3

Time of one vibration = 10ˢ·55.

TABLE 13.—Values of T, the Time of Vibration of the Balance Needle in a Vertical Plane.

Göttingen Mean Time.	Arc at commencement.	Number of vibrations.	Time of one vibration.	Temperature of Needle.
d. h.	′		s.	°
Jan. 14 2	7·5	30	9·94	56·5
Jan. 30 2	8·0	20	9·54	58·9
Feb. 6 3	15·0	30	9·45	54·5
Feb. 10 0	8·0	10	9·40	51·5
Feb. 14 0	12·0	28	9·65	48·1
Feb. 16 18	5·0	10	10·00*	44·0
Feb. 22 1	12·0	30	9·15	54·4
Feb. 27 4	12·0	20	9·42	53·0
Mar. 10 1	7·0	20	9·50	51·2
Mar. 13 2	12·0	30	9·30†	55·0
Mar. 21 3	12·0	20	9·43	48·5
Mar. 28 3	10·0	12	9·45	40·5
Apr. 3 3	10·0	30	9·48	54·0
Apr. 11 22	12·0	30	9·65	35·0
Apr. 17 3	7·0	30	9·60	54·5
Apr. 23 23	10·0	20	9·78	46·2
May 1 6	10·0	30	9·80	57·6
May 9 6	7·5	30	9·73	54·6
May 16 18	7·0	20	9·60	46·2
May 24 3	8·0	30	9·70	49·1
May 31 23	10·0	30	9·75	48·4
June 8 2	10·0	30	9·55	56·2
June 15 0	7·5	30	9·72	59·5
June 20 22	10·0	20	9·80	58·4
June 29 3	12·0	20	9·50	55·3
July 13 8	8·0	20	9·25	67·8
July 21 7	10·0	30	9·14	61·7
July 26 3	12·0	30	9·28	65·0
July 28 7	10·0	20	9·36	61·3
Aug. 4 23	7·5	30	9·35	60·0
Aug. 18 3	7·5	30	9·45	71·2
Aug. 22 22	10·0	30	9·25	54·6
Aug. 25 0	10·0	25	10·75‡	60·5
Aug. 29 22	14·0	30	9·97	54·5
Sept. 6 20	12·0	30	11·25‡	60·7
Sept. 13 1	12·0	30	10·75	62·3
Sept. 18 2	12·0	30	10·62	65·0
Sept. 22 3	8·0	30	10·62	63·7
Sept. 27 6	7·0	40	11·17‡	51·9
Sept. 29 0	7·0	40	10·95	46·4
Oct. 1 20	4·0	10	11·04	56·9

* Feb. 16. This observation is from a *natural* vibration (produced by currents of air in the box ?).

† Mar. 13. After this vibration the magnetometer box was lifted for an instant and then replaced.

‡ Aug 23 and 31, and Nov. 12. The balance needle was removed for temperature experiments, and on Sept. 26 the magnetometer box was removed in order to be covered with gilt paper.

TABLE 13—*continued.*

Göttingen Mean Time.	Arc at commencement.	Number of vibrations.	Time of one vibration.	Temperature of Needle.	Göttingen Mean Time.	Arc at commencement.	Number of vibrations.	Time of one vibration.	Temperature of Needle.
d. h.	′		s.	°	d. h.	′		s.	°
Oct. 9 2	6·0	30	10·50	49·9	Dec. 1 3	3·0	40	10·02	40·7
Oct. 18 3	7·5	30	10·55	43·3	Dec. 1 22	5·0	30	9·70	35·8
Oct. 25 2	2·7	25	10·20	43·2	Dec. 3 22	4·2	40	9·90	47·2
Nov. 2 3	7·0	25	10·30	41·0	Dec. 4 22	5·0	30	10·01	48·2
Nov. 2 22	6·0	30	10·36	38·3	Dec. 6 22	3·5	40	9·74	45·0
Nov. 8 20	4·5	30	10·34	36·2	Dec. 7 22	3·8	40	10·04	46·5
Nov. 12 20	4·5	30	10·40*	41·6	Dec. 8 22	3·2	40	9·97	46·1
					Dec. 10 22	3·6	40	9·90	46·6
Nov. 13 22	3·0	20	11·20	39·5	Dec. 11 22	4·0	30	9·96	47·4
Nov. 14 22	2·0	12	11·25	38·8	Dec. 12 22	3·8	30	9·85	47·3
Nov. 16 22	5·0	20	10·88	42·8	Dec. 13 22	3·7	40	9·78	47·5
Nov. 17 22	3·5	20	10·88	40·6	Dec. 14 22	4·2	15	9·79	49·9
Nov. 19 22	5·0	30	10·64	41·6	Dec. 15 22	4·1	30	9·87	43·0
Nov. 21 0	4·5	30	10·67	42·5	Dec. 17 22	3·7	40	9·69	45·4
Nov. 21 23	4·0	40	10·58	46·0	Dec. 18 22	3·6	40	9·75	44·6
Nov. 23 0	3·3	30	10·47	39·1	Dec. 19 22	4·4	40	9·61	45·2
Nov. 23 23	4·0	30	10·62	35·5	Dec. 22 1	4·2	30	9·99	49·2
Nov. 24 0	4·0	15	10·55	36·0	Dec. 22 22	4·4	15	9·74	49·5
Nov. 26 22	4·0	15	10·06	49·0	Dec. 24 22	3·8	30	9·73	49·5
Nov. 27 3	1·8	30	10·02	50·0	Dec. 25 22	4·0	30	9·72	47·8
Nov. 27 22	3·6	30	10·03	48·5	Dec. 26 22	3·3	30	9·57	46·5
Nov. 28 22	3·8	30	10·02	46·4	Dec. 27 22	3·7	30	9·55	44·4
Nov. 29 22	4·0	30	10·05	40·4	Dec. 28 22	3·9	30	9·47	45·7
Nov. 30 22	4·0	15	10·27	41·5	Dec. 29 22	3·7	40	9·49	46·3

55. The following are the mean values of T, and the consequent values of *k*, $T' = 12^{s}{\cdot}0$, $\theta = 71° 10'$:—

Jan. —Aug. 23.	$T = 9{\cdot}52$;	$k = 0{\cdot}0000158$,	approximately $k = 0{\cdot}000015$
Aug. 24—Sept. 1.	$T = 10{\cdot}40$;	$k = 0{\cdot}0000133$,	approximately $k = 0{\cdot}000014$
Sept. 5—Nov. 13.	$T = 10{\cdot}65$;	$k = 0{\cdot}0000126$,	approximately $k = 0{\cdot}000013$
Nov. 13—Dec.	$T = 10{\cdot}07$;	$k = 0{\cdot}0000141$,	approximately $k = 0{\cdot}000014$

The approximate values of *k* are those given at the foot of each page of the Magnetical Observations. It will be observed that all of these values differ very considerably from that obtained, No. 51, which was adopted in the reductions for the Abstracts, after the above values of *k* were printed in the notes to the Magnetical Observations.

56. Adjustments.

August 23. 1843. The balance needle was removed for the purpose of determining its temperature coefficient; the needle was placed in a small copper trough with a glazed lid, which trough was surrounded by water, contained in a larger trough.

---

* Aug. 23 and 31, and Nov. 12. See note on preceding page.

Aug. 24. 1843. The temperature experiments were repeated; the brass rings containing the spider crosses were removed, and the needle was immersed in water of different temperatures; at the end of the observations the needle was found considerably tarnished; the stains were partially removed by rubbing with crocus. After the temperature observations the needle was vibrated horizontally, and then adjusted. When the needle was placed on the agate planes it was altogether out of balance, the S. end falling till caught by the Y; the horizontal screw was then turned in till the reading of the micrometer was about 200 *minus;* both micrometers read the same, and the N. end was much better in focus than before.

Sept. 1. 1843. The balance needle was again removed in order to determine the temperature coefficient, the previous observations not being satisfactory.

Sept. 2. Temperature observations continued, the needle being placed in water as before. The stains were partially removed by rubbing with crocus.

Sept. 4. After vibrating the balance needle horizontally, and determining the value of the divisions of the micrometer head, observations were made to verify the horizontality of the fixed wires in the micrometers, when it was found necessary to move the fixed wire of the right micrometer down 8 micrometer divisions.

The micrometer heads were exchanged for convenience of reading, as the readings are almost always negative, or the north pole of the needle is generally above the horizontal.

57. The deviation of the line joining the spider crosses from the magnetic axis of the needle was determined, by repeated reversals, to be + 8 micrometer divisions; merely lifting the needle by the Y*s* was found to give readings differing sometimes 20, 30, and even 40 divisions. The horizontal screw was moved till a negative reading of about − 130 was obtained; and as it had been previously found that lifting by the Y*s* altered the reading, the needle was not left till consistent readings were obtained after the different lifts. The following were the readings at each lift after the last movement of the horizontal screw :—

− 120, − 126, − 121, − 120, − 127, − 138, − 134, − 131, − 134, − 136, − 131.

September 26^d 4^h—6^h, 1843. The balance magnetometer box was removed in order to be covered, externally and internally, with gilt paper.

November 13, 1843. The balance needle was again removed for the purpose of determining its temperature coefficient; the brass rings and spider crosses were removed, and the needle immersed in water as before. The needle was adjusted the same day. The value of the micrometer division was also determined, and the deviation of the line joining the spider crosses from the magnetic axis was found − 36 divisions. The needle was left reading about − 60 divisions.

58. Mode of observation and reduction.

The moveable wire of the right micrometer is made to bisect the spider cross 5^s before the minute of observation, and that of the left micrometer 5^s after the minute of observation; the mean of the two readings gives the position of the needle at the minute. The readings increase negatively or positively as the north pole of the needle moves above or below the horizontal wire; the readings are generally negative. The quantities given in the magnetical observations are obtained thus:—n being the observed reading of the needle, t that of the thermometer, $\frac{q}{k} = 7{\cdot}90$ the temperature coefficient, R the quantity in the Tables,

$$\mathrm{R} = 700 + \frac{q}{k}\,(t - 26^\circ) + n$$

increasing tabular quantities, therefore, indicate increasing vertical force.

§ 7. DETERMINATION OF THE TEMPERATURE COEFFICIENTS OF THE DEFLECTION, BALANCE, AND BIFILAR MAGNETS.

Deflection Magnet.

59. The magnet used for deflections in observations of the absolute horizontal intensity was placed in a copper trough, resting on a beam of the deflection apparatus (25.); the temperature was varied by means of ice and water of different temperatures; a thermometer lying on the magnet indicated its temperature; the declination magnet was observed simultaneously with the deflected (or unifilar) magnet; and the bifilar magnet before and after each change of temperature.

60. If m be the moment of the magnet, X be the horizontal intensity of the earth's magnetism, δ be the westerly declination, u the angle which the deflected magnet makes with the astronomical meridian, then

$$m = \mathrm{X} \tan (u - \delta)$$

differentiating, all the quantities being variable, and reducing

$$\frac{\Delta m}{m} = \frac{\Delta u - \Delta \delta}{\frac{1}{2} \sin 2 (u - \delta)} + \frac{\Delta \mathrm{X}}{\mathrm{X}}$$

or if u and u_0 are the unifilar readings, d and d_0 the declinometer readings, b and b_0 the corrected readings of the bifilar magnetometer when the temperatures of the deflecting magnet are t and t_0; D is the mean deflection, in this case small; f the coefficient for reducing the declinometer scale divisions to values of unifilar divisions, k the bifilar coefficient, then since $\frac{\Delta m}{m} = q\,(t_0 - t)$

$$q = \frac{\overline{u - u_0} - f\,\overline{d - d_0}}{\mathrm{D}\,(t_0 - t)} + \frac{k\,(b - b_0)}{(t_0 - t)}$$

The quantities in the last column of the following Table have been obtained from this formula.

TABLE 14.—Observations for the Temperature Coefficient of the Deflection Magnet.

Göttingen Mean Time, 1843.	Temperature of Magnet.	$t_0 - t$.	Reading of Unifilar.	Reading of Declinometer reduced $= f d$.	$u - u_0$ *minus* $f(d - d_0)$.	Bifilar.		Correction for 1° Fahr. $= q$.
						Reading Corrected.	Thermometer.	
d. h. m.	°	°	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	°	
Nov. 10 23 24	Magnet	away.	264·39	157·26				
23 53	35·30	24·65	10·73	156·65	1·80	501·0	42·6	0·000287
Nov. 11 0 13	59·95	16·90	12·05	156·17	1·60	501·7	42·7	·000369
0 30	76·85	17·90	13·07	155·59	1·23	502·7	42·8	·000278
0 46	58·95	22·05	11·88	155·63	1·69	503·3	42·9	·000309
1 6	36·90	20·20	10·05	155·49	1·48	503·9	43·0	·000289
1 24	57·10	21·60	11·68	155·64	1·45	504·3	43·2	·000260
1 42	78·70	22·20	13·16	155·67	1·51	505·6	43·6	·000272
2 0	56·50	19·90	11·11	155·13	1·29	505·8	43·8	·000265
2 18	36·60	20·30	10·05	155·36	1·31	506·8	43·9	·000253
2 38	56·90	25·05	11·50	155·50	1·91	507·4	44·0	·000307
2 54	81·95	21·05	13·41	155·50	1·21	506·8	44·3	·000233
3 14	60·90	24·05	12·50	155·80	1·61	507·4	44·6	·000268
3 32	36·85	30·50	10·78	155·69	2·21	507·7	44·8	·000287
3 53	67·35	23·40	13·30	156·00	1·91	508·0	44·9	·000324
4 10	43·95	22·55	11·72	156·33	1·79	507·8	45·0	·000315
4 28	66·50		13·88	156·70		508·1	45·0	
4 45	Magnet	away.	264·35	157·02				

The mean value of $q = 0{\cdot}0002877$.

Balance Magnet.

61. The value of the coefficient for the balance magnet was obtained by observations, similar to those for the deflecting magnet, on 5 different days; weight was given to the result of each day's observations, depending on the formula, No. 32. The final result was

$$q = 0{\cdot}000073.^*$$

62. The impossibility of determining the value of the micrometer divisions of the balance magnetometer by the usual method has been already pointed out. It is obvious, therefore, that if shut up to this method the temperature corrections cannot be applied even when the observations are left in the state of micrometer divisions. The doubt whether the changes of the magnetic moment of the needle occur as rapidly as those of temperature in all cases, and therefore, whether a coefficient obtained from changes of 30° or 40° in a few minutes (as in the temperature experiments) was likely to be applicable to observations where the changing temperature of the needle was rarely above 1° in the hour, and the fact that other sources of error (perhaps the effect of temperature on the points of support of the

---

* Tables 19 and 20, Introduction to the Makerstoun Observations, 1841 and 1842.

needle) were altogether omitted,* these induced me to apply a correction obtained by a method which first occurred to me in 1842, for the purpose of avoiding the necessity of removing the needle and breaking up the series of observations. This method has already been described, and the final results have been given in the Transactions of the Royal Society of Edinburgh (Vol. xvi., p. 73); the coefficients obtained by this method were used for correcting the *results* of the observations of 1841 and 1842;† they have also been used in correcting all the observations in this volume. It will be necessary to enter more fully into the investigations here.

63. A series of days being selected during which the readings of the instrument seem regular (rejecting any day of marked disturbance), and in which the changes of temperature from day to day are considerable; the hourly or two hourly readings for the position and temperature of the needle are separately summed; if y_1 be the sum (or mean) of the micrometer readings for the first day in the series, y_2 for the second day, . . . y_n for the n^{th} day; t_1, t_2 . . . t_n being the corresponding sums (or means) of the thermometer readings, if q' be the temperature coefficient in micrometer divisions, and it be assumed that the vertical force changes gradually throughout the period, a being the sum (or mean) of the daily changes for all the hours summed for values of $y_1\ y_2$, &c., we shall then have a series of equations like the following, in which it is considered that the temperature of the preceding day is either greater than that of the succeeding in all the series, or that it is less than it:—

$$\left.\begin{array}{ll}
y_1 - y_2 = -a - (t_1 - t_2)\,q' & y_p - y_{p+1} = -a - (t_p - t_{p+1})\,q' \\
y_1 - y_3 = -2a - (t_1 - t_3)\,q' & y_p - y_{p+2} = -2a - (t_p - t_{p+2})\,q' \\
\vdots \qquad \vdots \qquad \vdots & \vdots \qquad \vdots \qquad \vdots \\
y_1 - y_{n+1} = -na - (t_1 - t_{n+1})\,q' & y_p - y_{p+n+1} = -na - (t_p - t_{p+n+1})\,q'
\end{array}\right\} \quad (1.)$$

Summing all those equations in which a has the same coefficient, naming the differences $y_p - y_{p+1}$, Δy_1; $t_p - t_{p+1}$, Δt_1, and since if $t_1 > t_2$, then $y_1 < y_2$, we shall have the equations

$$\left.\begin{array}{l}
\dfrac{\Sigma\,\Delta\,y_1}{\Sigma\,\Delta\,t_1} = q' + \dfrac{a}{\Delta\,t_0} \\
\dfrac{\Sigma\,\Delta\,y_2}{\Sigma\,\Delta\,t_2} = q' + \dfrac{2\,a}{\Delta\,t_0} \\
\vdots \qquad \vdots \qquad \vdots \\
\dfrac{\Sigma\,\Delta\,y_n}{\Sigma\,\Delta\,t_n} = q' + \dfrac{n\,a}{\Delta\,t_0}
\end{array}\right\} \quad . \ . \ . \ . \ . \ . \ . \ . \ . \ . \quad (2.)$$

---

* It will be evident, that the method of obtaining the value of the unit for the balance magnetometer, described No. 51, supposes no other source of error than that due to the varying time of vibration, or that the causes of error indicated above are of the second order compared with it.

† The temperature coefficient, obtained by the usual method, had been applied, and the observations so corrected had been printed before I had satisfied myself of the preferability of the new coefficient.

where, as it tends to simplify the investigation, and is at the same time sufficiently accurate, $\Delta\, t_0$ is the mean of *all* the values of $\Delta\, t$.

Taking the difference of each of the equations with that of every one after it, series of equations of the following form will be obtained :—

$$\frac{\Sigma\,\Delta\, y_p}{\Sigma\,\Delta\, t_p} - \frac{\Sigma\,\Delta\, y_{p+r}}{\Sigma\,\Delta\, t_{p+r}} = -\frac{r\,a}{\Delta\, t_0}$$

Summing these series of equations, we obtain the following :—

$$\overline{n-1}\left(\frac{\Sigma\,\Delta\, y_1}{\Sigma\,\Delta\, t_1} - \frac{\Sigma\,\Delta\, y_n}{\Sigma\,\Delta\, t_n}\right) + \overline{n-3}\left(\frac{\Sigma\,\Delta\, y_2}{\Sigma\,\Delta\, t_2} - \frac{\Sigma\,\Delta\, y_{n-1}}{\Sigma\,\Delta\, t_{n-1}}\right) + \ldots = -\frac{n+1\,.\,n\,.\,n-1}{6}\cdot\frac{a}{\Delta\, t_0}$$

Summing equations (1.), we have

$$q' = \frac{1}{n}\cdot\Sigma\,\frac{\Sigma\,\Delta\,(y)}{\Sigma\,\Delta\,(t)} - \frac{n+1}{2}\cdot\frac{a}{\Delta\, t_0}$$

From these two equations q' will be obtained.

63. A period of 52 days, from June 1 till July 22, 1843, was selected as nearly free from disturbances (the 3d and 7th of June only being rejected on this account), and as containing considerable daily changes of temperature; the sums of the micrometer and thermometer readings for each day were entered in columns titled $\Sigma\, y$, $\Sigma\, t$, each sum, from June 1 till June 26, was then compared with all the sums following, up to the 27th day after. The differences will be found in the following Table in two portions, namely those for which t_p is greater and less than t_{p+r}. The results for a second period, namely, from August 4 till September 18, 1844, are also given.

TABLE 15.—Results of Comparisons at different Intervals.

Period.	Interval between comparisons.	$t_p > t_{p+r}$				$t_p < t_{p+r}$				Mean of the results.
		No. of comparisons.	$-\Sigma\,\Delta\,(y)$	$\Sigma\,\Delta\,(t)$	$\frac{-\Sigma\,\Delta\,(y)}{\Sigma\,\Delta\,(t)}$	No. of comparisons.	$\Sigma\,\Delta\,(y)$	$-\Sigma\,\Delta\,(t)$	$\frac{\Sigma\,\Delta\,(y)}{-\Sigma\,\Delta\,(t)}$	
	Days.		Mic. Div.	°	Mic. Div.		Mic. Div.	°	Mic. Div.	Mic. Div.
June 1—July 22. 1843.	1	7	1149·8	102·8	11·2	11	2916·7	325·8	8·9	9·5
	2	7	2050·1	224·4	9·1	11	3925·7	477·0	8·2	8·5
	3	9	3171·6	379·2	8·4	9	4341·2	541·4	8·0	8·2
	4	11	3879·0	446·5	8·7	8	4012·0	496·0	8·1	8·4
	5	9	3230·8	386·2	8·4	10	3552·0	421·4	8·4	8·4
	6	7	2967·8	316·5	9·4	11	3035·0	363·6	8·3	8·8
	7	5	2403·0	277·2	8·7	17	5294·4	685·2	7·7	8·0
	8	4	1857·9	210·0	8·8	14	5314·9	694·1	7·7	7·9
	9	6	1391·3	167·9	8·3	12	6094·5	775·1	7·9	7·9
	10	6	782·0	96·1	8·1	11	5281·9	724·6	7·3	7·4
	11	7	1853·8	196·0	9·5	11	5793·0	732·5	7·9	8·2
	12	5	1558·0	210·0	7·4	14	5488·3	669·2	8·2	8·0
	13	6	1439·6	192·0	7·5	13	5656·1	734·5	7·7	7·7

TABLE 15—*continued.*

Period.	Interval between comparisons.	$t_p > t_{p+r}$				$t_p < t_{p+r}$				Mean of the results.
		No. of comparisons.	$-\Sigma\,\Delta\,(y)$	$\Sigma\,\Delta\,(t)$	$\frac{-\Sigma\,\Delta\,(y)}{\Sigma\,\Delta\,(t)}$	No. of comparisons.	$\Sigma\,\Delta\,(y)$	$-\Sigma\,\Delta\,(t)$	$\frac{\Sigma\,\Delta\,(y)}{-\Sigma\,\Delta\,(t)}$	
	Days.		Mic. Div.	°	Mic. Div.		Mic. Div.	°	Mic. Div.	Mic. Div.
June 1—July 22. 1843.	14	6	1305·6	161·5	8·1	16	8350·4	1053·9	7·9	7·9
	15	5	867·6	116·0	7·5	13	7452·6	928·7	8·0	8·0
	16	1	249·2	19·0	13·1	17	6895·8	878·3	7·8	8·0
	17	3	122·7	28·2	4·3	15	7329·7	819·5	8·9	8·8
	18	3	523·6	48·8	11·7	16	7453·3	871·6	8·5	8·7
	19	5	722·5	61·5	11·7	14	7758·3	849·7	9·1	9·3
	20	3	684·6	57·5	11·9	15	6731·9	789·2	8·5	8·8
	21	4	371·8	25·0	14·9	18	9824·7	1094·4	9·0	9·1
	22	1	− 60·3	7·5	− 8·0	17	7868·6	901·8	8·7	8·6
	23	1	64·8	26·3	2·5	17	8330·0	929·5	9·0	8·8
	24	1	170·0	33·6	5·1	17	8277·3	939·0	8·8	8·7
	25	3	322·0	88·1	3·7	16	8599·2	961·7	8·9	8·5
	26	5	445·0	125·6	3·5	14	7763·2	861·2	9·0	8·3
	For all the intervals.	130	33523·8	4003·4	8·37	357	163340·7	19518·9	8·37	8·37
August 4—September 18. 1844.	1	9	2291·0	281·9	8·1	9	3612·2	359·7	10·0	9·2
	2	11	4152·1	450·0	9·2	6	3270·8	282·9	11·6	10·1
	3	10	4586·5	399·1	11·5	6	2443·8	216·4	11·3	11·4
	4	8	3163·2	269·6	11·7	8	3292·5	281·6	11·7	11·7
	5	7	2738·0	372·4	7·4	9	6118·6	572·1	10·7	9·4
	6	6	2947·5	348·2	8·5	11	7982·3	833·1	9·6	9·2
	7	7	3026·9	342·7	8·8	8	4941·3	609·6	8·1	8·4
	8	7	2422·9	364·7	6·6	10	6033·4	690·0	8·7	8·0
	9	5	2542·5	306·0	8·3	11	6990·6	852·6	8·2	8·2
	10	6	3128·4	394·9	7·9	10	8812·7	979·3	9·0	8·7
	11	7	2382·6	283·3	8·4	9	8056·0	935·0	8·6	8·6
	12	5	1859·8	255·3	7·3	11	7594·6	967·8	7·8	7·7
	13	5	2446·5	310·3	7·9	11	7621·9	1048·7	7·3	7·4
	14	6	2423·3	327·6	7·4	13	8301·4	1106·1	7·5	7·5
	15	4	1029·4	145·1	7·1	12	7282·6	952·0	7·6	7·6
	16	4	992·0	219·3	4·5	12	6617·7	819·2	8·1	7·3
	17	5	1836·3	259·6	7·1	11	6533·0	882·7	7·4	7·3
	18	4	1622·8	194·7	8·3	12	5914·3	841·3	7·0	7·3
	19	3	929·6	110·6	8·4	13	6211·6	912·9	6·8	7·0
	20	4	1529·3	174·8	8·7	13	5500·6	783·0	7·0	7·3
	21	3	1348·5	212·7	6·3	12	5666·1	684·3	8·3	7·8
	22	6	2623·6	386·2	6·8	11	6152·6	685·1	9·0	8·2
	For all the intervals.	132	52022·7	6409·0	8·11	228	134950·6	16295·4	8·28	8·24

From the series, June—July, 1843, in which $t_p < t_{p+r}$, the following result was obtained :—

$$\frac{1}{2}\sum\frac{\Sigma\,\Delta\,(y)}{\Sigma\,\Delta\,(t)} = 8{\cdot}338\,;\ \frac{a}{\Delta\,t_0} = 0{\cdot}0375,\ \Delta\,t_0 = -\,54{\cdot}7,\ a = -\,2{\cdot}05 \text{ or the mean daily}$$

$$\text{change} = \frac{a}{9} = -\,0.23\,;\ q' = 7{\cdot}832 \text{ microm. div.}$$

64. The series, June—July, in which $t_p > t_{p+r}$, and the series, August—September, 1844, are either two irregular in the number of days compared, or the

number of days compared are too few to give good results.* It is obvious, however, that if we consider the equation

$$q' = \frac{\Sigma \Delta y_r}{\Sigma \Delta t_r} - \frac{r a}{\Delta t_r},$$

that the value of q' deduced from the quantity $\frac{\Sigma \Delta y_r}{\Sigma \Delta t_r}$ alone will be too much or too little according as the sign of Δt_r is positive or negative; whence, if a period of moderate length be selected, throughout which the mean daily temperature increases and diminishes considerably, we may neglect the sign of Δt_r and the quantity a, as in the summations the coefficients of the latter will nearly destroy each other. For periods of moderate length, and free from disturbances, it is the fact, as may be seen from the previous Table (with the exception of one day), that the signs of Δy_r and Δt_r are always opposite. The latter method, then, will be found the easiest, and, it is conceived, in general the most accurate. The mean results obtained for the series, June—July, when $t_p >$ and $< t_{p+r}$, are indeed exactly the same, and the partial results seem to indicate that the sign of a is itself so variable as to render its total effect nugatory. The same remark applies to the series August—September 1844.

The following Table contains a series of results obtained according to the latter method. In each series each day is compared with every day following it to the end of the series for the differences Δy and Δt:—

TABLE 16.—Determinations of the Temperature Coefficient for the Balance Magnet from Comparisons of the Daily Observations.

Period.	$\Sigma \Delta (t)$	$\Sigma \Delta (y)$	q'	Observed Time of Vibration.	Remarks.
1843.	°	Mic. Div.	Mic. Div.	s.	
Jan. 16—Jan. 21	525·3	4315·3	8·21	9·7	In 1843 there were 9 daily observations, made at two-hourly intervals, from 18h till 10h. Sept. 2, the needle was removed in order to determine its temperature correction by the method of deflections.
Jan. 23—Jan. 28	817·7	5723·5	6·99	9·7	
Jan. 30—Feb. 4	576·0	4151·5	7·21	9·5	
Feb. 6—Feb. 11	609·9	4080·6	6·69	9·4	
June 1—June 30	14320·4	114646·9	8·006	9·7	
Sept. 6—Sept. 16	1083·7	8730·4	8·04	10·8	
1844.					
May 9—May 24	8415·4	66621·7	7·93	8·6	In 1844 there were observations made at every hour of the day. The needle was removed between September 1843 and February 1844 for temperature experiments.
Aug. 3—Sept. 6	21696·9	171460·5	7·902	8·5	
For the series in 1843, . . .	17933·0	141648·2	7·898	9·8	
For all, . . .	48045·3	379730·4	7·903	8·5	

The mean value of q' from the series in 1843 is 7·90, and from the temperature experiments it is 4·9 micrometer divisions; the mean of the two series in 1844 gives $q' = 7{\cdot}91$, while the temperature experiments give it 3·8 microm. div.

---

* Such as these results are, however, their disagreement with the result obtained by deflection experiments and vibration, is, in each case, even more than that of the adopted result.

65. The following Table contains the results deduced in three cases when respect has been paid to the sign of $t_p - t_{p+r}$; the last column contains the value of q', obtained by giving equal values to the quantities $\frac{-\Sigma\,\Delta\,(y)}{\Sigma\,\Delta\,(t)}$ and $\frac{\Sigma\,\Delta\,(y)}{-\Sigma\,\Delta\,(t)}$.

TABLE 17.—Results of Comparisons, regard being paid to the sign of $t_p - t_{p+r}$.

Period.	$t_p > t_{p+r}$			$t_p < t_{p+r}$			Mean Value of q'.
	$\Sigma\,\Delta\,(t)$	$-\Sigma\,\Delta\,(y)$	$\frac{-\Sigma\,\Delta\,(y)}{\Sigma\,\Delta\,(t)}$	$-\Sigma\,\Delta\,(t)$	$\Sigma\,\Delta\,(y)$	$\frac{\Sigma\,\Delta\,(y)}{-\Sigma\,\Delta\,(t)}$	
	°	Mic. Div.	Mic. Div.	°	Mic. Div.	Mic. Div.	Mic. Div.
1843. June 1—July 22	4003·4	33523·8	8·37	19518·9	163340·7	8·37	8·37
1844. May 9—May 24	5404·3	37559·9	6·95	3011·1	29061·8	9·65	8·30
Aug. 3—Sept. 18	6409·0	52022·7	8·12	16295·4	134950·6	8·28	8·20
For all the periods	15816·7	123106·4	7·783	38825·4	327353·1	8·431	8·107

66. The three final results obtained are $q' = 7{\cdot}832$, $q' = 7{\cdot}903$, and $q' = 8{\cdot}11$; the adopted value of $q' = 7{\cdot}9$ micrometer divisions.

67. Early in the investigation of this subject it occurred to me that it might not be desirable to eliminate all the effects of change of temperature on the position of the needle, as the actual daily or diurnal variations of the earth's magnetism might depend to some extent on the same cause. The results, obtained in many ways which it is not necessary to repeat wholly here, shewed that, at least for periods of a month, no such connexion exists, or that it is inappreciable. To such an extent had the supposition been refuted, that it was ultimately totally forgotten by me, and, of course, it was also forgotten that others might entertain a similar suspicion; the fact that it has been proposed as an objection to the method will render it desirable that I should adduce distinct evidence of its futility.

68. As it will scarcely be supposed by any one that the earth's magnetism varies immediately with changes of the aërial temperature, the results obtained from the comparison of one day with the next following may be first considered. As far as the results, Table 15, go, the comparisons of one day with the next following give a considerably larger value of q' than that adopted, and, therefore, one differing still more from the value obtained by the usual method; this at least tends to prove that the result adopted is much better than that by the other method. In the following, which also prove the same fact, one-sixth of the comparisons are of the readings on days with those on the second days following, namely, Saturdays with

Mondays; the remaining five-sixths are of the readings on days with those on the days immediately following :—

1844. 123 Comparisons, $q' = 8{\cdot}33$. Approximate value of q', by temperature experiments and vibrations, $= 3{\cdot}8$
1845. 126 Comparisons, $q' = 8{\cdot}87$. .... $= 3{\cdot}0$

69. The most severe method of testing the accuracy of the coefficient thus obtained, is that of artificially heating the Observatory, and of comparing the instrumental readings on days when so heated with those on days when the temperature of the magnet depends on natural causes ;[*] the results of such a series of comparisons are given below. In order to render the series perfectly trustworthy, all selection has been avoided. From January 1 till March 16, 1843, the stove in the Observatory was lighted every day, with the exception of January 23 ; it was not lighted on any other days of the year, excepting March 22 and 23, October 19, November 25, and December 21 ; the means of the instrumental readings, corrected for temperature by the adopted coefficient (7·9), on each of these days were compared with the means on the four or five days immediately preceding or succeeding, and the means on March 13, 14, and 15 (the last three days on which the stove was continuously lighted), were compared with the five succeeding days on which the stove was not lighted. The sums of the differences $\Sigma\,\Delta\,(t)$ and $\Sigma\,\Delta\,(y)$ are given in the following Table, together with the sums of the differences of the external temperatures $\Sigma\,\Delta\,(\mathrm{T})$ for the same days :—

TABLE 18.—Results of Comparisons when the differences of the Temperature depend on Artificial Causes.

Day of comparison.	Days compared with	No. of comparisons.	$\Sigma\,\Delta\,(\mathrm{T})$	$\Sigma\,\Delta\,(t)$	$\Sigma\,\Delta\,(y)$	Error of coefficient.	Resulting coefficient.
1843.	1843.		°	°	Mic. Div.	Mic. Div.	Mic. Div.
Jan. 23	Jan. 18—21, 24—28	9	+63·4	139·2	+195·7	+1·41	6·49
Mar. 13	Mar. 16—21,	5	−21·2	35·4	+ 85·7	+2·42	5·48
Mar. 14	Mar. 16—21,	5	−27·5	31·4	+ 41·2	+1·31	6·59
Mar. 15	Mar. 16—21,	5	−29·0	31·9	+ 28·7	+0·90	7·00
Mar. 22	Mar. 16—21, 24—28	9	+79·1	58·8	+ 6·5	+0·11	7·79
Mar. 23	Mar. 16—21, 24—28	9	+55·7	80·4	− 58·3	−0·73	8·63
Oct. 19	Oct. 14—18, 20—25	9	−41·2	108·3	−278·4	−2·58	10·48
Nov. 25	Nov. 21—24, 27—Dec. 1	9	−84·5	113·1	+ 75·5	+0·67	7·23
Dec. 21	Dec. 16—20, 22—27	9	−49·9	99·0	+ 7·4	+0·07	7·83

The results of all the comparisons are—

$\Sigma\,\Delta\,(\mathrm{T}) = -\,55^{\circ}{\cdot}1$, $\Sigma\,\Delta\,(t) = 697^{\circ}{\cdot}5$, $\Sigma\,\Delta\,(y) = +\,104{\cdot}0$ mic. div.; error of adopted coefficient $= +\,0{\cdot}15$ mic. div.

---

[*] This method was that first tried for the determination of the coefficient, but ultimately abandoned on account of the heated stove generating currents of air in the room and magnetometer boxes.

On three days the signs of $\Sigma\Delta$ (T) and of $\Sigma\Delta$ (t) are the same, namely, on January 23, March 22, and March 23; if the comparisons with these days be rejected, we have

$\Sigma\Delta(T) = -253^{\circ}\cdot3$, $\Sigma\Delta(t) = 419^{\circ}\cdot1$, $\Sigma\Delta(y) = -39\cdot9$ mic. div.; error of adopted coefficient $= -0\cdot09$ mic. div.

In all the previous comparisons the signs of $\Sigma\Delta$ (T) and $\Sigma\Delta$ (t) are the same; in this series they differ, and the coefficient is unaltered.*

70. In correcting the observations by this coefficient, no attention has been paid to the varying times of vibration in the vertical plane; this, as has already been noticed, cannot be done. From the results in Table 16, it seems very doubtful if it should be done, as the correction deduced at various times does not seem to differ with the time of vibration. After correcting the observations made in the years 1844 and 1845 by the same coefficient, I was led, from the results, to suspect that some source of error still remained. Investigations for the temperature correction at different times throughout these years have shewn me that the coefficient in micrometer divisions is not constant, and that it varies from some cause which I have not as yet determined; certainly, however, it does not vary directly with the time of vibration in the vertical plane, as theory would shew (49, 51.), but rather inversely; this, however, and other facts in connexion with the 6th conclusion (50.), will be considered in the Introduction to the Observations for 1844. It will be enough to mention at present, that the results for the value of q', in 1844 and 1845, vary from 7·0 to 10·0 micrometer divisions; by the usual method, at the end of 1845, it would not exceed 3·0 micrometer divisions.

Bifilar Magnet.

71. The value of the temperature coefficient for the bifilar magnet, determined by temperature experiments on two days, which gave very consistent results, is

$$q = 0\cdot000304,$$

See Table 19, Introduction, 1841-2; or if

$$k = 0\cdot00013,\ q' = 2\cdot34 \text{ scale divisions},$$

this includes the theoretical correction for the expansion of the suspending silver wires and brass grooved wheels; it did not seem improbable, however, that other sources of error might exist. The results for the balance needle shewed that this might be determined by comparisons of the daily observations; such comparisons have been made, and the following Tables contain the results. The differences of the daily sums of the bifilar magnetometer readings are indicated by Δ (x), the results $\frac{\Sigma\Delta(x)}{\Sigma\Delta(t)}$ are given in scale divisions whose value $= 0\cdot00013$.

---

* If other evidence of the accuracy of this method of determining the temperature coefficient should still be desired, I would refer to the coincidence of the results for the value of k, No. 51, and end of note, p. xxxvii.

TABLE 19.—Determinations of the Temperature Coefficient for the Bifilar Magnet, from Comparisons of the Daily Observations.

Period.	$t_p > t_{p+r}$			$t_p < t_{p+r}$			q'	
	$\Sigma \cdot \Delta (t)$	$-\Sigma \Delta (x)$	q'	$-\Sigma \Delta (t)$	$\Sigma \Delta (x)$	q'	Mean of results.	Mean result.
1844.	°	Sc. Div.	Sc. Div.	°	Sc. Dv.	Sc. Div.	Sc. Div.	Sc. Div.
May 9—May 24	5334·9	13066·8	2·45	2359·9	4033·0	1·71	2·08	2·22
May 29—June 28	11938·2	24597·2	2·06	26719·2	45966·3	1·72	1·89	1·83
July 17—July 30	1843·1	3004·0	1·63	4637·8	8470·4	1·83	1·73	1·77
Sept. 2—Sept. 25	27322·6	53684·3	1·96	622·1	1260·8	2·03	1·99	1·96
Nov. 26—Dec. 13	17855·4	36791·6	2·06	2143·7	3104·5	1·45	1·76	1·99
For all the Periods	64294·2	131143·9	2·04	36482·7	62835·0	1·72	1·88	1·92

The mean of the two final results gives

$$q' = 1{\cdot}90 \text{ scale divisions}; \quad q = 0{\cdot}000247$$

this value of q has been adopted, and all the observations in this volume are corrected by the equivalent values in scale divisions.

72. The following Table (similar to Table 15) contains the particulars of the comparisons for intervals of different length, from May 14 till June 28, 1844.

TABLE 20.—Results of Comparisons at Different Intervals.

Interval between comparisons.	$t_p > p+r$				$t_p < t_{p+r}$				Result from all the comparisons.
	No. of comparisons.	$-\Sigma \Delta (x)$	$\Sigma \Delta (t)$	$\frac{-\Sigma \Delta (x)}{\Sigma \Delta (t)}$	No. of comparisons.	$\Sigma \Delta (x)$	$-\Sigma \Delta (t)$	$\frac{\Sigma \Delta (x)}{-\Sigma \Delta (t)}$	
Days.		Sc. Div.	°	Sc. Div.		Sc. Div.	°	Sc. Div.	Sc. Div.
1	5	142·8	169·2	0·8	8	311·6	300·0	1·0	1·0
2	4	229·8	118·2	1·9	8	656·8	457·9	1·4	1·5
3	4	459·5	217·7	2·1	8	1035·1	619·6	1·7	1·8
4	6	689·5	338·1	2·0	6	1255·5	650·5	1·9	2·0
5	6	811·2	479·1	1·7	7	1316·7	812·8	1·6	1·7
6	6	976·5	453·9	2·1	7	1574·1	896·7	1·8	1·9
7	7	1194·2	590·7	2·0	8	2097·9	1198·1	1·8	1·8
8	5	949·9	502·9	1·9	7	1894·9	1081·4	1·8	1·8
9	6	790·7	413·4	1·9	6	1821·9	1085·3	1·7	1·7
10	3	805·6	362·9	2·2	9	2030·1	1116·7	1·8	1·9
11	4	864·5	390·9	2·2	8	1970·3	997.0	2·0	2·0
12	5	1075·5	588·4	1·8	8	1989·7	1147·8	1·7	1·8
13	7	1324·3	698·2	1·9	6	1839·5	1087·9	1·7	1·8
14	6	1229·5	599·7	2·0	9	1940·1	1171·5	1·7	1·8
For all the intervals.	74	11543·5	5923·3	1·95	105	21734·2	12623·2	1·72	1·79

73. With the exception of the results of the values of $\frac{\Sigma \Delta (x)}{\Sigma \Delta (t)}$, where the comparisons have been of the readings on one day with those on the next following, the results are remarkably consistent for all intervals, and in *no* case does the result amount to that by temperature experiments; as an evidence, however, that the first results differ from the others only accidentally, the following is given, which contains all the comparisons made of the readings on one day with those on the day immediately following, with the exception already mentioned for the balance magnet, No. 68 :—

TABLE 21.—Results of Comparisons with One Day's Interval.

Period compared.	No. of comparisons.	$\Sigma \Delta t$	$\Sigma \Delta x$	q.
1844.		°	Sc. Div.	Sc. Div.
May 9—May 24	11	884·8	1792·6	2·03
May 29—June 28	26	1262·8	1989·8	1·58
July 17—July 31	11	504·5	691·9	1·37
Sept. 2—Sept. 25	19	834·0	1551·9	1·86
Nov. 26—Dec. 13	15	842·9	1563·2	1·85
All the Periods	82	4329·0	7589·4	1·85

In this case it will also be remarked, that no partial result is as great as that from the temperature experiments.

74. As a farther evidence that the result obtained for this instrument is also independent of any cause, such as has been already suggested for the balance needle, the following Table contains the results of the comparisons on the *same* days as those already given for the balance needle, and on which the differences of temperature depend on artificial heat :—

TABLE 22.—Results of Comparisons when the Differences of Temperature depend on Artificial Causes.

Day of comparison.	Days compared with	No. of comparisons.	$\Sigma \Delta (T)$	$\Sigma \Delta (t)$	$\Sigma \Delta (x)$	Error of coefficient.	Resulting coefficient.
1843.	1843.		°	°	Sc. Div.	Sc. Div.	Sc. Div.
Jan. 23	Jan. 18—21, 24—28	9	+63·4	130·2	+36·3	+0·29	1·61
Mar. 13	Mar. 16—21,	5	−21·2	28·1	−14·6	−0·52	2·42
Mar. 14	Mar. 16—21,	5	−27·5	26·1	− 8·0	−0·31	2·21
Mar. 15	Mar. 16—21,	5	−29·0	28·1	+ 4·8	+0·17	1·73
Mar. 22	Mar. 16—21, 24—28	9	+79·1	62·4	+52·0	+0·83	1·07
Mar. 23	Mar. 16—21, 24—28	9	+55·7	79·5	+23·3	+0·29	1·71
Oct. 19	Oct. 14—18, 20—25	9	−41·2	99·6	+32·8	+0·33	1·57
Nov. 25	Nov. 21—24, 27—Dec. 1	9	−84·5	97·0	+29·9	+0·31	1·59
Dec. 21	Dec. 16—20, 22—27	9	−49·9	83·8	+ 1·4	+0·02	1·88

The quantities $\Delta(x)$ are obtained from the observations corrected by the coefficient q' corresponding to the value $q = 0{\cdot}000247$ (as in this volume), but are reduced to scale divisions of the common value 0·00013. In one case only does the resulting coefficient exceed that by the temperature experiments. The final results are as follow :—

$$\Sigma\,\Delta\,(T) = -\,55^{\circ}{\cdot}1;\ \Sigma\,\Delta\,(t) = 634^{\circ}{\cdot}8,\ \Sigma\,\Delta\,(x) = +\,157{\cdot}8 \text{ Sc. div.; error of adopted coefficient} = +\,0{\cdot}25 \text{ Sc. div.}$$

If the three days, January 23, March 22, and March 23, on which the sign of $\Sigma\,\Delta\,(T)$ is the same as the sign of $\Sigma\,\Delta\,(t)$, be rejected, we shall have

$$\Sigma\,\Delta\,(T) = -\,253^{\circ}{\cdot}3;\ \Sigma\,\Delta\,(t) = 362^{\circ}{\cdot}7,\ \Sigma\,\Delta\,(x) = +\,46{\cdot}3 \text{ Sc. div.; error of adopted coefficient} = +\,0{\cdot}13 \text{ Sc. div.}$$

75. It is not necessary to reason on these results; the remarkable agreement of the partial results by all the methods is at once evident. A cause of the difference from the result by temperature experiments has been already pointed out, namely, the probable effect of temperature in diminishing the elasticity of the suspending wires. This source of error might be avoided by a silk suspension, but another of a much graver nature would be introduced, namely, the effect of varying humidity, which could not be eliminated.

76. All the observations of the bifilar magnetometer have been corrected by the equivalents in scale divisions of the coefficient $q = 0{\cdot}000247$; the coefficients in scale division are given No. 39.

§ 8. INCLINOMETER.

77. The dip instrument was made by the late Mr ROBINSON of London. The vertical circle is 9½ inches in diameter; it is divided to 10′, the graduations counting from 0° on the horizontal to 90° on the vertical; 1′ is estimated with the aid of lenses attached to a glazed case; the vertical circle turns with a copper framework on a vertical axis, centred in a horizontal circle; the latter is 6 inches in diameter, is divided to 30′ and is read to 1′ by means of a vernier. A sliding framework carrying Y*s* moves within that bearing the agate planes on which the axle of the needle rests, the Y*s* serve to lift and lower the needle on the agates, but they have been found to act very irregularly, at times giving the needle a pitch in a certain direction. A level screwed to the basement plate indicates the horizontality of the agates; this was, however, also verified occasionally by means of a small level placed upon them; it was found that the level varied according as the door of the case inclosing the instrument was shut or open; it was, therefore, always tested with the door shut, as it is during observations.

78. The reading of the horizontal circle, when the vertical circle is in the magnetic meridian, was obtained with the aid of a horizontal needle, carried on a pivot whose arms rest on the agate planes. There are two dipping needles, numbered 1 and 2, and one end of each needle is marked A, the other end is marked B; all the

marks are on one face of each needle. The needle is observed in four positions with one end dipping, namely, with the marked face of the needle on the same side as, and opposite to, the graduated face of the circle, the latter being in the meridian, first to the east, and then to the west; as each extremity of the needle is observed there are thus eight readings obtained. The poles being changed, and the other end dipping, other eight readings are similarly obtained. The means of the two readings for each position are given in this volume.

In changing the poles, the needle was placed on a small wooden block having a hole to receive the axle; it then received eight strokes on each face (as in the method of double touch) from two magnets, each 9 inches long, $\frac{3}{4}$ inch broad.

79. The inclinometer occupied the pillar I, in the plan (Plate I.), to the east of the declinometer pillar till May 30. 1843, when it was removed to the wooden house, described No. 24, where it was placed on a strong wooden post unconnected with the floor.

80. After June 1843, many of the observations were rendered valueless by the action of the lifter on the needle when the latter was in certain positions. The following notes to the observations made at the time will explain the nature of the difficulty:—

July 26. 1843. This observation made with great care, in order to determine if the apparent increase of dip is real, or only due to instrumental error. Every reading was determined by at least a dozen trials; the different trials varied little for the same position with one exception, in which the readings varied 10′ on each side of the mean; there is, however, evidently something wrong with the lifter, as, on attempting to verify a reading marked (*a*), after the completion of the observation, only 73° 45′ could be obtained, instead of 74° 0′.

August 1. 1843. As it was found that the lifter did not move freely last observation, it was taken out, cleaned, and bent a little, so as to fit better; to-day's observation was then made, but some other source of error exists, as there is a tendency, in lowering the needle on the planes, to move it always in one direction; the readings thus may be made to go on increasing, and, by a slight difference in the mode of lowering, they may be made to go on diminishing. It cost two hours to make the first reading, and the observation is not considered good.

September 12. 1843. Previous to this observation, the agate planes were adjusted to horizontality as accurately as the small level would permit. The observation was bad, but chiefly in the reading marked (*), 67° 30′ was the reading generally gained, but after half-an-hour the needle rested at 68° 19′.

After this date the instrument was sent to Messrs ADIE and SON for adjustment, when the needle No. 1. was also adjusted.

The following are notes to the observations after the adjustment of the instrument:—

October 6. 1843. Observation not considered good—several of the readings doubtful—the needle often has a tendency to read *any thing*, and is very irregular in its motions when lowered by the Y*s*. (Observer W.)

October 8. 1843. Needle No. 2. The readings are much better than with needle No. 1, but some of them are doubtful; when lowered by the Y*s* the needle sometimes leaps 2° or 3°. (Observer W.)

October 9. 1843. Needle No. 1. This observation was considered fair till the last reading, which might have been taken at any thing from 73° to 75°.

Same date. Needle No. 2. A fair observation; some of the readings, however, were not certain to about 5′.

The observations were, in general, so unsatisfactory, that they were discontinued till Nov. 20; afterwards observations were made, which were, in general, more satisfactory.

81. Observations were made on April 18 and May 2, 1843, in different azimuths, in order to determine the correction due to the irregularity of the needle's axle, or perhaps to the presence of iron in the vertical circle; these observations have been already given (Table 21. and Table 22, Introduction, 1841-2.) The correction deduced was about − 11′ for needle No. 1. No correction has been applied to the results in this volume.

82. In 1846, the vertical circle was removed from the instrument and placed horizontally, the dip needle was suspended by a silk fibre within the circle, the needle and circle being in the same plane, the needle was then vibrated horizontally, and the zero of the graduations was placed in different azimuths; the time of vibration was found very little affected by the varying positions of the circle; it seems probable, therefore, that the correction above is due solely to the imperfections of the axle.

§ 9. BAROMETER.

83. The barometer is by NEWMAN. The tube is 0·552 inch in diameter; the scale is attached to a brass rod, terminating in an ivory point, which, at each observation, is made to meet its image in the mercury of the cistern; the cistern is about 3 inches in diameter; the vernier professes to read to 0·002 inch, and that 0·001 may be estimated, but the graduation is so inexact as to give changes in error from 0·002 to 0·003 inch. The barometer was compared indirectly with the standard of the Royal Society, by means of one made by NEWMAN for the DUKE of ARGYLE. The comparisons of the DUKE of ARGYLE's barometer with the flint and crown glass standards of the Royal Society are given Table 23, Introduction, 1841-2; they are not consistent; the mean gives

Correction of the DUKE of ARGYLE's standard barometer to those of the Royal Society
= − 0·009 inch.

A consistent series of comparisons of the Makerstoun standard with the DUKE of ARGYLE's standard, given Table 24, Introduction, 1841-2, gives the mean

Correction of the Makerstoun standard barometer to the standard belonging to the DUKE of ARGYLE = − 0·003 inch.

whence

Correction of the Makerstoun standard barometer to the standard barometers of the Royal Society = − 0·012 inch.

84. All the observations are corrected to the Royal Society's standard barometer, and for temperature by SCHUMACHER's Tables, given in the Report of the Committee of Physics of the Royal Society.

The cistern of the barometer is 213 feet above the mean level of the sea at Berwick-upon-Tweed. (See No. 1.)

§ 10. THERMOMETERS.

85. The dry and wet bulb thermometers are by ADIE and SON. The bulbs are 0·3 inch in diameter, and tenths of a degree can be estimated on the scales; they are placed four inches apart on a wooden slab, the bulbs projecting below it. The slab was placed in the middle of a wooden case, the sides and top of which were formed like Venetian blinds, the case was open below and on the side next the Observatory; the thermometers, which were read from within, were about 9 inches distant from the west window on the north side of the building. As the thermometers were subject to the effect of radiation from the interior of the Observatory, the slab carrying them was, after January 24. 1843, fixed to the front of a wooden case with a slightly projecting top and sides, and with a double sloping back, the thermometers being 4 feet from the ground; the case revolves on a post, and can be turned from within the Observatory by means of cords and pulleys. When an observation is made, the case is turned till the thermometers face the window, being 9 inches distant from it; after reading, which is done through the glass (thus avoiding any source of error due to the proximity of the observer, or the light at night), the case is again turned till the thermometers face the west if the sun shine in the morning, the east if it shine in the evening, and the north at all other times, unless it rain, when the back of the case is turned to the wind, if any. Holes were cut in the front of the case immediately behind the bulbs of the thermometers, in order to give a free circulation to the air around them, and to prevent any effect from the different temperature of the wood; a small projecting ledge below carries the cistern of the wet bulb, and prevents, to some extent, the effect of radiation from the soil on the thermometers. It was found, early in the summer of 1843, that, in spite of all precautions, when the sun shines strongly before 7 A.M., or after 5 P.M., the thermometers are visibly affected by it. A moveable front, to which the thermometer slab was attached, was accordingly placed on the case, and, in the morning or

the evening when the sun shone, the front was removed and suspended at an equal height, on the west or east wall of the Observatory, being kept apart from it by projecting pins. Observations at different times shewed that, all other things being equal, the temperature was the same in all the positions; but when the sun shone it might be one or two degrees less to the east or west than to the north.

86. It sometimes happens when the air is very humid during frost, especially when the temperature is falling, that the dry bulb thermometer reads less than the wet bulb; when such is the case the readings of the wet bulb have not been printed in this volume, and in the summations for the abstracts the readings of the thermometers are considered as the same.*

87. The maximum and minimum register thermometers, on RUTHERFORD's construction, were made by ADIE and SON. Before January 24, 1843, they were placed 4 feet from the ground, near the east window, facing the north, and were protected from the sun's rays in the morning and evening by projecting spars of wood. After January 24 they were placed on the same board with the dry and wet bulb thermometers, 5 feet from the ground.

88. The following table contains the corrections of the thermometers to a standard thermometer by NEWMAN. The comparisons were made in melting ice or snow for the freezing point, and in water at different temperatures. This table also contains the correction for the bifilar and balance thermometers, which have not been applied (see No. 33).

TABLE 23.—Corrections of Thermometers to the Standard by NEWMAN.

Temperature.	Dry.	Wet.	Max.	Min.	Bifilar (Ross).	Balance.
°	°	°	°	°	°	°
32	−0·7	−0·6	−0·1	+0·5	−0·1	−0·4
36	−0·6	−0·5			−0·1	−0·4
40	−0·6	−0·5	0·0	+0·5	−0·1	−0·5
45	−0·5	−0·4	+0·1		−0·3	−0·4
50	−0·4	−0·3	+0·2	+0·4	−0·5	−0·3
55	−0·4	−0·3	+0·3	+0·5	−0·5	−0·3
60	−0·4	−0·2	+0·4	+0·6	−0·4	−0·2
63	−0·3	−0·2			−0·3	−0·2
65				+0·7		
67	−0·1	0·0			−0·3	−0·2
70	+0·1	+0·2	+0·5		−0·2	−0·1
76	+0·2	+0·3	+0·7		−0.1	+0·2
79	+0·1	+0·3	+0·9		−0·1	+0·2

---

* The cause of this apparent anomaly, it is conceived, is this, that the moisture deposited on the silk cover of the wet bulb is frozen as it is deposited, until it becomes a thickish coat of silk and ice; the mercury in the bulb will thus, following the falling temperature of the air, contract slowly, and will be less affected by any evaporation proceeding on the outer surface of the coat; on the dry bulb, however, the frozen moisture is but a thin film, as the bulb is generally dried between the observations, it will thus be easily affected by any evaporation, and become, in fact, a wet bulb thermometer; it might be advisable, therefore, instead of rejecting to substitute the readings of the wet bulb for the dry, and the readings of the dry bulb for the wet.

No correction has been applied to the observations of the dry and wet bulb thermometers; the observations of the maximum and minimum register thermometers have been corrected, and all the *abstracts* of results for the dry and wet bulb thermometers.

§ 11. RAIN-GAUGES.

89. The rain-gauge (A) is placed in a space, enclosed by a paling on the top of the Observatory hill, with a good exposure on all sides. The funnel mouth is 6·1 inches in diameter, 8 inches above the soil, and 218 feet above the level of the sea. The quantity of rain is measured at noon by pouring it into a glass tube, graduated with reference to the aperture of the funnel.

90. The monthly results of two other gauges are given in the abstracts. One (B) is placed on the top of the greenhouse roof, 680 feet NNE. of the Observatory gauge; the funnel mouth is 6·7 inches in diameter, it is connected with a graduated tube within the greenhouse, it is 18 feet from the ground, and 192 feet above the level of the sea. This gauge is sheltered to the E. and NE. by trees, and its indications are therefore less trustworthy, especially during easterly winds; the amount of rain received in the funnel is also affected by the gusts of wind deflected from the sloping roof.

91. The other gauge (C) is in the middle of the Makerstoun garden, with a good exposure; the funnel mouth is 6·7 inches in diameter, is 6½ feet above the soil, 171 feet above the level of the sea, and about 620 feet N. by E. of the Observatory gauge. The funnel is connected with a graduated tube. The greenhouse and garden gauges were observed by Mr MACGALL, the head-gardener.

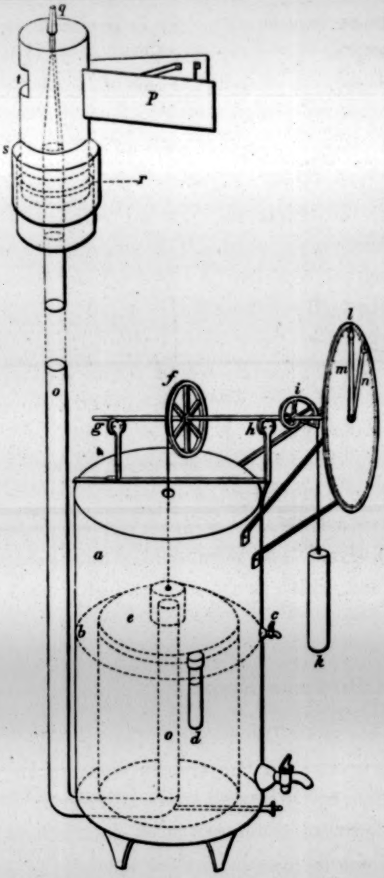
§ 12. ANEMOMETER.

92. The anemometer consists of two separate parts, both made and erected by ADIE and SON; one gives the direction, the other the pressure, of the wind.

93. The vane is placed on the north wall of the Observatory, and, by means of a rod and geering-wheels, it indicates the direction of the wind on a dial-plate within the building.

94. The anemometer proper, the invention of Mr R. ADIE of Liverpool, is placed at the north-east corner of the Observatory. This instrument will be best understood by a reference to the annexed figure; *a* is a cistern containing water to the level *b*, *c* being a turn-cock for letting the water off to the exact level, and *d* a glass gauge to shew when the water becomes too low, from evaporation or otherwise; an inverted vessel *e* is suspended in the water by a cord passing over the wheel *f*, whose axle rests on friction-rollers at *g* and *h*; *i* is a spiral which has a cord wrapped on it carrying a weight *k*, which balances the vessel *e*; *l* is a dial, graduated on the face near the circumference; *m* an index, attached to the common

axle of the wheel and spiral; *n* a loose index under the index *m*, which the latter carries forward by means of a projecting pin near the extremity; *o* a tube passing under the cistern *a*, which, entering the bottom, proceeds upwards within the vessel *e* till its open extremity is above the level of the water in a neck of the vessel *e*; the other end of the tube *o* is six feet above the outer wall of the observatory, where it is capped by a vane *p*; at the top of the tube *o* three brass rods are joined, which carry a small tube in which a pin within the top piece *q* rests or turns; the tube *o* is double at the top, containing between the tubes a quantity of mercury to the level *r*, the continuation of the cylindrical body of the vane enters the mercury, and a double portion *s* acts as an outer cover to the mercury cistern, *t* is an aperture, 2 inches square. When the wind blows, this aperture is presented to it, the wind then presses on the column of air within the tube *o* (being prevented from escaping under the vane by the mercury), and ultimately on the top surface of the vessel *e*, forcing the latter up, turning the axle carrying the index *m*, which carries before it the index *n*, leaving it at its farthest excursion. The dial is graduated as follows:—The surface of the top of the vessel *e* on which the wind presses is 78 square inches, therefore a pressure of 1 lb. on this surface is equivalent to $\frac{144}{78}$ lb. on a square foot. Different weights are suspended on the wheel *f*, acting oppositely to the vessel *e*, and the position of the index for each weight shews the pressure on a square foot of surface equal to the weight suspended multiplied by the above ratio. The spiral, on which the weight *k* acts, is the involute of a circle whose radius $r = \frac{R}{2\pi}$ where R is the radius of the wheel *f*, and 2π is the circumference to radius of one, if the vessel *e* were homogeneous throughout its depth, the equal increments of motion in the index would correspond to equal increments of pressure.*



---

* The application of the involute of the circle as the spiral is due, I believe, to Professor FORBES. It is easily shewn that if the vessel *e* be homogeneous, *w* being the weight of a ring whose depth is one

95. The instrument is observed in the following manner:—About 2^m before the observation hour the pressure shewn by the index *n* is registered as the maximum pressure; this index is then put back to zero, and from 7^m to 10^m afterwards, the position to which it has again been carried by the index *m* is noted as the present pressure: the index *n* is then set to zero, and a similar double observation made at the next observation hour.

96. It is conceived that this instrument is trustworthy. It is occasionally, however, liable to slight derangements; the cup at the top containing mercury fills with rain, which, when frozen, prevents the vane from turning its aperture to the wind.

§ 13. State of the Sky.

97. The quantity of clouds is estimated, the whole sky covered with clouds being noted as 10, the complete absence of clouds being zero. The motions of the clouds are estimated as follows:—A well marked portion of cloud which passes through, or nearly through, the zenith, is watched till the direction is found in which it seems to run down, or parallel to, one corner of the Observatory; this direction is then estimated very nearly, as the walls are in the meridian and prime vertical. About the end of 1843, the points of the compass, with reference to each corner, were marked on the paling surrounding the Observatory. I have no hesitation in saying, that the motions of upper currents of air thus observed are much better determined than the motion of the lower or surface current by the vane.

98. The nomenclature adopted is that of Mr HOWARD, with certain combinations, which are, in general, sufficiently descriptive. The term scud refers to that loose, generally amorphous, and often rainy cloud, which is the lowest of all excepting the stratus.

§ 14. Clock, Stove, and Computing Room.

99. The mean time clock in the Observatory is by DENT of London; it is kept at Göttingen mean time by means of comparisons with the transit clocks in the Astronomical Observatory, the errors of which are determined by Sir THOMAS BRISBANE, by myself, or my assistant. The rate of the mean time clock is kept small by placing small weights on, or taking them off, the bob of the pendulum.

inch, P the pressure which the wind exerts on the top of *e* diminishing its weight, β the corresponding arc through which the circumference of the wheel *f* moves (or the length of cord wrapped on the wheel), W the weight of the counterpoise *k*, and σ the specific gravity of the material (zinc) of which *e* is formed, then

$$\frac{P}{\beta} = \frac{W}{2\pi} + \frac{w}{\sigma}$$

a constant ratio.

100. A copper stove occupied the position S in the plan (Plate I.), and was lighted every day from January 1 till March 15, 1843, with one exception, namely, on January 23. It was only lighted three times again in 1843, namely, on October 19, November 25, and December 21, as it tended to increase the diurnal range of temperature, and to create aërial currents within the Observatory.

A small brick building was erected 24 yards to the east of the Observatory, which was occupied after March 16 as a computing room. It was determined that the bricks at that distance had no effect on the reading of the declinometer.

§ 15. DESCRIPTION OF THE TABLES OF OBSERVATIONS.

Daily Observations of Magnetometers, pages 1—28.

101. The first column contains the Göttingen mean time, astronomical reckoning, of the observations of the declination magnetometer. Göttingen time is $49^m\ 50^s$ in advance of Makerstoun time.

The second column gives the absolute westerly declination in degrees, minutes, and decimals, deduced as described, No. 23.

The third column contains the observations of the bifilar magnetometer in scale divisions, corrected for temperature to 26° Fahr., see Nos. 39 and 45; increasing numbers indicate increasing force. The bifilar is observed 2^m after the declination.

The fourth column contains the temperature of the bifilar magnet in degrees of Fahrenheit.

The fifth column gives the readings of the balance magnetometer in micrometer divisions, corrected for temperature to 26° Fahr., see No. 58; increasing numbers indicate increasing force. The balance is observed 3^m after the declination.

The sixth column contains the temperature of the balance needle in degrees of Fahrenheit.

102. At the foot of each page are given the declinometer torsion-circle readings for the torsion eliminated. A comparison of any one reading with the previous reading will give the number of degrees of torsion introduced between the two periods; 10° of torsion introduces an error into the observations of $0'{\cdot}9$; references are made to footnotes, which at times indicate the cause that has produced the torsion, and the period that it may have existed. The value, k, of one scale division of the bifilar magnetometer, the whole horizontal force at Makerstoun being unity, is also given, together with the approximate value, k, of one micrometer division of the balance magnetometer, the whole vertical force being unity, obtained as in No. 55. The value used in the abstracts differs considerably, and is $k = 0{\cdot}000009$.

The observer's initial will be found at the same date of the meteorological observations.

Term-Day Observations of Magnetometers, pages 29—48.

103. The first column contains the minute in Göttingen mean time of the declination observation. The hour is given in the middle of each triplet of columns.

The second column gives the absolute westerly declination in degrees, minutes, and decimals.

The third column gives the bifilar magnetometer mean scale readings, corrected for temperature to 26° Fahr. The observations are made 2^m after those of the declination.

The fourth column contains the balance magnetometer micrometer readings, corrected for temperature to 26° Fahr. The observations are made 3^m after those of the declination.

104. The readings of the bifilar and balance thermometers at the commencement of each hour are given, together with the initial of the observer during the hour, at the foot of each page.

105. The corrections for temperature are applied thus:—The first observation (at the commencement) of each hour is corrected for the difference of the magnet's temperature at the hour from 26° Fahr., the corrections to the observations between the hours are then interpolated between the initial corrections.

Extra Observations of Magnetometers, pages 49—73.

106. These are observations made generally during magnetic disturbances. The same remarks apply with regard to temperature corrections, &c., as in the term observations, excepting that the Göttingen day and hour are given in the first column, and the minute is given for the observations of each instrument.

107. The observations of magnetic dip and absolute horizontal intensity require no other explanation than will be found in sections 4 and 8.

Daily Meteorological Observations, pages 86—197.

108. The first column contains the Göttingen mean time, astronomical reckoning, of the observations, all of which are made within a few minutes of the hour, and generally in a certain order. The Göttingen time is $49^m\ 50^s$ in advance of the Makerstoun time. The second column contains the readings of the barometer corrected for temperature, and to the Royal Society's standard barometers. See No. 83.

The third column gives the *observed* readings of the dry bulb thermometer in degrees Fahrenheit.

The fourth column contains the *observed* readings of the wet bulb thermometer.

The fifth column gives the differences of the readings of the dry and wet bulb thermometers.

The sixth column contains the readings of the maximum and minimum register thermometers, *corrected* by the quantities in Table 23. The minimum temperature of the night, read at 9 A.M. Makerstoun mean time, is immediately preceded by the maximum of the previous day, read at the same time.

The seventh column gives the readings, in inches and decimals, of the Observatory rain-gauge, made at noon.

The eighth column contains the maximum pressure of wind on a square foot of surface which has occurred since the previous observation, No. 95.

The ninth column contains the greatest pressure which occurs within 10 minutes at the time of observation; titled the *present* pressure; this is sometimes higher than the maximum previously recorded.

The tenth column gives the point of the compass from which the surface-wind blows, as observed on the vane-dial.

The eleventh column gives the points of the compass from which the clouds move, observed as described No. 97; when there are more motions than one observed, the motion of the lowest stratum of clouds is placed first, that is to say, next to the motion of the surface-wind in the tenth column; the motion of the next higher stratum is separated from that of the lower stratum by a colon (:), and so with those higher still. Thus, July 12^d 18^h, while the motion of the surface-current was probably from WSW., the lowest stratum of clouds moved from NW., the next higher from NNW., and the highest clouds from SE. by S.

The twelfth column gives the estimated quantity of the sky covered with clouds, or the estimated surface of clouds compared with that of the whole hemisphere, the latter being 10.

109. The page opposite to these columns contains the species of clouds and general observations on the state of the sky or weather, as observed immediately after the observations of the meteorological instruments. The clouds whose motions have been defined are placed first, commencing with the lowest, and when several motions have been observed the strata are separated, as the directions are in the eleventh column, by colons (:); thus, in the above example, July 12^d 18^h. Scud moved from NW., cirro-cumulous scud from NNW., and cirri from SE. by S. When the directions in which any clouds move have not been determined, these are separated from the others by a cross +; in the previous example there was a thick mass of cirrous haze and cumulo-strati to E., whose motion was undetermined. The initial of the observer is given last; and as the same person makes the magnetical and meteorological observations, the initials serve for the magnetical observations at the same hours.

Term-Day and Extra Meteorological Observations, pages 200—217.

110. These observations are made, during the magnetical term-days, at the solstices and equinoxes,* and on other occasions.

---

* The observations at the solstices and equinoxes were forwarded by Sir THOMAS BRISBANE to M. QUETELET of Brussels, and have appeared in his collection of "Observations des Phénomènes Périodiques," Mémoires de l'Académie Royale de Bruxelles.

The columns are the same as in the daily meteorological observations, excepting that the columns for the maximum and minimum thermometers are awanting.

ABSTRACT OF RESULTS, pages 219—305.

111. These Tables have appended or prefixed to them all requisite explanations, together with remarks on the conclusions deduced. It may be mentioned here, also, that in the *Tables* of Abstracts for the Magnetical Observations, summer consists of the months of May, June, and July, while, in the *Tables* of Abstracts for the Meteorological Observations, summer consists of the months of June, July, and August.

Curves of the Term-Day Observations after page 306.

112. The term-day observations have been projected and printed by a new process, which, as it may be of use in other cases, it may be desirable to describe here. Having obtained a sufficient number of *lithographed* copies of the curve paper, the observations were projected with the greatest accuracy, and the lines drawn with lithographic ink, by Mr WELSH; from these drawings the copies in this volume were obtained by the *Anastatic* process. The advantages of this method are, 1*st*, the accuracy with which the observations are at once projected from the original observations (instead of being copies merely); 2*d*, that the curve paper has only to be *drawn* once for all the curves; 3*d*, that the expense is considerably less. The curve paper was prepared, and the curves were transferred by Mr R. APPEL, lithographic and anastatic printer, Ipswich.

GENERAL REMARKS.

113. It is perhaps desirable that some reasons should be given for the methods of reducing and printing the magnetical observations adopted in this volume.

114. The westerly declination has been given in the common units, degrees, and minutes, because the units *are* common; as it is as easy to give the variations of declination, with reference to the astronomical as to any other meridian, the printed observations are all *absolute*. They are thus at once comparable with all other observations which have been, or may be, reduced to the common units.

115. The bifilar and balance magnetometer readings are given in scale and micrometer divisions respectively, because *no* common unit of force has been yet agreed on, and because, in the case of the balance magnetometer, I had every reason to believe that an accurate value of the micrometer divisions had not been obtained. The *results* have been converted into parts of force, because it was necessary for conclusions on the variations of the total force and of the dip. If, however, the unit at different places must be variable, it seems desirable that it should be the same at the same place for the horizontal and vertical components and for the total force.

116. The observations of both the force magnetometers have been corrected for temperature, it is conceived, with a considerable approximation to accuracy; but not wishing to dogmatize in the use of a new mode of determining the temperature coefficient, I have, with Sir THOMAS BRISBANE'S leave, printed in all cases the temperatures of the magnets. In this, as in some other cases, I have preferred giving what may seem at present too much, rather than any one should afterwards have reason to find that I had given too little.

117. All the reductions have been made by my present assistants, Messrs WELSH and HOGG, and by myself. Each computation has been performed twice, and that generally by different individuals.

MAKERSTOUN, *June* 1846.

POSTSCRIPT.

Value of the Scale Divisions of the Bifilar Magnetometer in parts of the whole Horizontal Force.

118. A consideration of the theory of the bifilar magnetometer will shew that it is assumed that the suspending wires do not act at all by any elastic force; that, in fact, the force opposing the magnetic force is the resolved portion of that due to the weight suspended endeavouring to gain its lowest point, and, therefore, that if u be any angle from the magnetic meridian to which the magnet is deflected, the corresponding torsion of the wires being v (No. 35.), then $\frac{\sin u}{\sin v}$ is a constant ratio. If the assumption fail, there will be every reason to doubt the accuracy of the coefficient k, which depends on $\sin v$ and its *difference*. Any considerable error was not suspected; but the method described in the note, pages 2 and 3, having been found to answer so well for the determination of the coefficient for the balance needle, there was little doubt but that it would succeed much better for that of the bifilar magnet. Experiments were accordingly made when the previous Introduction was nearly through the press.

119. If the equation of equilibrium for the bifilar magnet when at right angles to the magnetic meridian be (No. 35.)

$$m\,\mathrm{X} = f$$

and if a magnet, whose moment is M, be placed in the magnetic meridian, with its centre in the continuation of the bifilar magnet when at right angles to the magnetic meridian, and at a distance r from its centre, the resulting angle of deflection being Δv, equal n scale divisions, the equation of equilibrium will be (see the note already referred to),

$$m\left(\mathrm{X} + \frac{c\,\mathrm{M}}{r^3}\right)\cos \Delta v = f'$$

where f' is the force opposed to the magnetic force. For a horizontal force X', which would alone have brought the magnet into this position the equation would have been

$$m\,X' \cos \Delta v = f'$$

whence

$$X' = X + \frac{c\,M}{r^3}$$

and

$$\frac{X'-X}{X} = \frac{\Delta X}{X} = \frac{c\,M}{r^3\,X} = \frac{r_1^{\,3}}{r^3}\,\frac{\tan u}{2}$$

u being the deflection of a freely suspended magnet produced by placing the deflecting bar at right angles to the magnetic meridian, with its centre at a distance r_1 from the centre of the suspended magnet.

As k is the value of $\frac{\Delta X}{X}$ for one scale division

$$k = \frac{r_1^{\,3}}{r^3}\,\frac{\tan u}{2\,n}\text{*}$$

120. The results of the experiments made on two days, and at a different distance on each day, are,

First day, $k = 0{\cdot}0001021$.
Second day, $k = 0{\cdot}0001025$.

The value of k from the formula, $k = a \cot v$, being $k = 0{\cdot}000125$. This difference is very considerable, so much so, that even though again delaying the publication of the Observations for 1843, I have determined to go over the various reductions in the abstracts, with the coefficients derived from the above in the following manner:— k being the coefficient given in Table 11, the coefficient used in the reductions in the abstracts of results is obtained from it in multiplying by $\frac{1023}{1250} = 0{\cdot}8184$; $0{\cdot}0001023$ being the mean value of k obtained by deflections, and $0{\cdot}0001250$ the value of k obtained from the formula $k = a \cot v$. The coefficients used are therefore as follow:

Jan. 1^d—April 27^d 1843, $k = 0{\cdot}0001021$,
April 28 —Nov. 8 1843, $k = 0{\cdot}0000986$,
Nov. 10 —Dec. 31 1843, $k = 0{\cdot}0001064$.

MAKERSTOUN, *August* 1846.

---

* It is obvious that the investigation for the balance magnet might be made in this way with advantage, the final equation in the note, p. xxxvi, would then stand thus—

$$k = \frac{r_1^{\,3}}{r^3}\cdot\frac{\tan u}{2\,n\,\tan\theta}.$$

DAILY OBSERVATIONS

OF

MAGNETOMETERS.

MAKERSTOUN OBSERVATORY,

1843.

Göttingen Mean Time of Declination Observation.				DECLINATION.		BIFILAR.		BALANCE.	
						Corrected.	Thermometer.	Corrected.	Thermometer.
	d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Jan.	1	20	0	25	29·88	533·4	36·1	740·0	36·7
		23	0		29·51	533·8	41·0	765·2	42·0
Jan.	2	2	0		29·62	530·0	49·8	778·2	50·2
		5	0		25·04	536·6	53·9	846·6	54·9
		20	0	25	23·16	528·2	33·7	750·2	35·5
		23	0		30·43	532·1	43·0	785·8	45·0
Jan.	3	2	0		28·72	540·6	50·2	783·9	51·4
		5	0		27·00	539·9	50·7	789·8	51·8
		20	0	25	26·75	534·8	48·7	785·4	51·4
		23	0		26·72	531·8	49·0	787·4	50·5
Jan.	4	2	0		29·28	536·0	51·8	789·8	52·8
		5	0		27·71	540·5	54·9	783·6	56·0
		20	0	25	26·77	537·4	48·8	774·9	51·0
		23	0		27·76	530·9	49·5	780·8	51·7
Jan.	5	2	0		29·15	541·8	56·3	778·9	59·0
		5	0		27·74	535·3	52·6	785·6	54·8
		20	0	25	27·02	533·8	45·0	773·4	47·3
		23	0		28·39	529·0	45·4	759·0	47·0
Jan.	6	2	0		29·93	541·2	52·8	786·7	54·4
		5	0		26·33	546·0	59·7	786·9	59·7
		20	0	25	23·44	538·7	49·9	773·5	52·0
		23	0		25·27	538·3	52·8	785·2	55·2
Jan.	7	2	0		27·38	541·2	53·9	767·2	55·6
		5	0		24·33	539·2	54·5	755·5	54·8
Jan.	8	20	0	25	24·15	533·6	33·8	739·9	34·8
		22	0		24·13	533·3	35·1	758·3	36·3
Jan.	9	0	0		26·26	539·6	43·3	763·0	45·0
		2	0		29·33	555·5	53·1	801·1	56·6
		4	0		26·57	538·4	50·0	733·3	49·5
		6	0		25·93	541·5	49·5	760·3	48·5
		8	0		25·32	540·7	50·3	782·9	51·7
		10	0		23·27	544·1	56·5	778·2	57·9
		20	0	25	24·77	531·9	46·4	757·8	46·8
		22	0		25·41	532·0	46·5	770·8	47·8
Jan.	10	0	0		26·79	535·6	48·8	775·8	50·5
		2	0		28·03	540·1	50·8	775·0	53·0
		4	0		25·96	542·1	54·0	771·8	56·8
		6	0		26·01	539·3	51·9	785·1	54·0
		8	0		23·39	541·4	51·8	785·5	54·4
		10	0		22·72	542·0	53·6	786·6	56·5
		20	0	25	23·26	538·5	49·9	827·1	52·5
		22	0		23·29	535·8	49·4	778·4	52·2
Jan.	11	0	5		25·76	534·0	49·2	778·1	51·5
		2	0		26·72	545·3	53·8	785·2	56·0
		4	0		26·20	542·3	52·9	759·3	55·5
		6	0		25·48	540·6	52·1	773·2	54·2
		8	8		23·01	527·0	52·7	834·4	54·9
		10	0		22·06	531·4	52·6	811·0	55·7

Göttingen Mean Time of Declination Observation.				DECLINATION.		BIFILAR.		BALANCE.	
						Corrected.	Thermometer.	Corrected.	Thermometer.
	d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Jan.	11	20	0	25	23·43	535·0	47·3	778·1	50·3
		22	0		23·04	532·2	46·0	785·0	49·1
Jan.	12	0	0		25·63	533·6	50·0	782·9	53·5
		2	0		25·85	540·0	52·1	773·5	54·5
		4	0		24·18	538·8	53·8	771·4	56·0
		6	0		23·77	536·1	51·3	773·4	53·1
		8	0		23·59	538·5	52·7	782·0	55·1
		10	0		21·44	537·1	53·3	786·2	56·4
		20	0	25	22·69	535·3	43·3	768·2	45·8
		22	0		22·42	534·3	45·5	772·0	47·6
Jan.	13	0	0		25·56	534·4	48·0	775·4	49·7
		2	5		27·44	539·9	52·6	773·7	54·0
		4	0		……	538·4	52·8	782·5	53·8
		6	0		24·45	537·9	51·7	778·4	52·7
		8	0		27·29	539·6	52·7	782·1	54·0
		10	0		24·11	540·4	53·5	787·3	55·5
		20	0	25	24·98	536·4	46·9	775·3	49·5
		22	0		23·79	529·8	45·4	781·2	47·7
Jan.	14	0	0		26·79	531·8	49·9	789·2	52·5
		2	0		28·18	540·9	54·4	783·6	56·5
		4	0		26·32	541·6	55·6	775·1	57·5
		6	0		25·32	539·1	52·1	780·8	54·1
		8	0		25·34	536·4	51·0	784·9	53·3
		10	0		24·77	535·3	52·1	788·3	54·8
Jan.	15	18	0	25	23·68	538·1	42·3	768·4	44·2
		20	0		25·81	542·9	47·1	761·5	48·8
		22	0		24·99	537·9	46·8	766·5	48·2
Jan.	16	0	0		28·52	540·0	48·9	766·9	50·0
		2	0		33·10	546·4	51·8	766·0	53·3
		4	0		29·26	547·3	54·9	775·5	56·4
		6	0		26·05	547·6	53·7	775·6	55·3
		8	0		25·11	544·2	54·0	773·6	55·5
		10	0		24·01	543·1	54·2	773·0	56·0
		18	0	25	26·22	539·9	50·0	771·3	52·3
		20	0		24·77	545·9	55·3	770·6	58·3
		22	0		25·18	538·7	53·8	766·6	55·8
Jan.	17	0	0		26·06	537·2	53·1	767·8	55·4
		2	0		27·61	539·0	54·0	770·5	56·1
		4	0		27·47	542·7	58·3	778·2	60·4
		6	0		26·73	532·2	56·0	790·0	57·8
		8	0		23·90	538·1	56·2	785·5	58·0
		10	0		22·74	537·9	56·8	782·5	58·6
		18	0	25	23·98	540·8	55·2	767·5	57·0
		20	0		24·08	541·0	56·4	774·6	58·2
		22	0		23·88	536·1	56·9	769·8	58·6
Jan.	18	0	7		27·49	534·0	57·4	771·4	59·0
		2	0		28·35	538·7	57·7	771·4	59·3
		4	0		27·16	540·5	57·2	780·4	58·6
		6	0		25·56	541·1	57·6	777·4	59·0
		8	0		29·33	537·5	57·7	774·8	59·0
		10	0		27·36	533·5	56·8	781·8	58·2

DECLINATION. Torsion removed, circle reading,—Dec. 20^d 1842, 168°; Jan. 2^d 21^h, 194°;* 6^d 6^h, 224°;* 9^d 21^h, 249°; 13^d 2^h, 3½°;† 16^d 23^h, 14°.

BIFILAR. $k=0{\cdot}0001248$. BALANCE. $k=0{\cdot}000015$ approximately.

---

* Jan. 2^d 21^h. It is probable that this change in the plane of detorsion was produced in taking out the magnet in order to make the Dip observation; it was found ultimately that two fibres of the suspension thread had been broken. It is conceived that one fibre had been broken in taking out the magnet, and another on replacing it, from the great change of torsion found on January 6.

† Jan. 13^d 2^h 30^m. After an observation for the value of $\frac{H}{F}$, the broken fibres mentioned above were withdrawn, and the torsion eliminated.

Jan. 17^d 0^h. The Declination observation was 20^m late on account of the torsion being removed from the suspension thread.

DAILY OBSERVATIONS OF MAGNETOMETERS, JANUARY 18—FEBRUARY 1. 1843.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Jan. 18	18	0	25	27·81	538·5	60·8	755·8	61·8
	20	0		27·98	536·2	59·5	747·7	62·0
	22	0		27·78	532·5	59·3	763·3	61·0
Jan. 19	0	0		29·83	529·3	58·3	771·8	59·8
	2	0		31·99	533·4	58·3	775·1	60·0
	4	0		30·00	542·1	59·0	780·8	60·3
	6	0		29·04	540·7	60·3	767·9	61·5
	8	0		27·85	538·0	60·3	758·1	61·5
	10	0		25·48	533·4	59·2	769·4	60·5
	18	0	25	27·29	537·2	55·8	773·1	57·4
	20	0		27·40	538·7	55·9	774·3	57·8
	22	0		27·17	533·3	55·3	775·5	56·8
Jan. 20	0	0		30·55	539·7	56·1	777·0	57·5
	2	0		32·02	532·5	56·7	776·9	57·8
	4	0		31·73	540·7	57·9	776·2	59·0
	6	0		29·98	538·3	57·2	779·7	58·6
	8	0		29·62	536·8	56·7	773·1	58·2
	10	0		28·27	537·6	55·7	774·9	57·0
	18	0	25	29·36	536·4	49·8	778·8	52·0
	20	0		29·08	543·4	53·0	778·9	55·8
	22	0		28·57	534·1	50·8	776·9	52·9
Jan. 21	0	8		30·48	534·6	52·7	775·6	55·0
	2	0		29·69	539·2	53·4	774·0	55·3
	4	0		27·00	540·4	53·9	774·8	55·5
	6	0		26·25	541·5	55·2	776·1	56·7
	8	0		25·46	540·8	54·9	771·6	56·5
	10	0		24·67	539·1	54·3	765·7	56·0
Jan. 22	18	0	25	25·14	531·1	42·2	733·5	43·8
	20	0		24·53	533·2	42·3	740·5	43·0
	22	0		23·30	527·3	41·8	746·8	42·4
Jan. 23	0	0		25·68	528·6	42·2	751·0	42·7
	2	0		29·65	534·1	43·0	741·2	43·4
	4	0		27·13	536·5	44·0	749·2	44·1
	6	0		......	......	......	......	......
	8	0		20·40	535·6	44·0	746·0	44·2
	10	0		23·59	533·7	44·2	743·8	44·5
	18	0	25	21·29	537·1	52·1	735·1	51·8
	20	0		24·30	543·0	53·7	740·7	53·4
	22	0		23·06	537·2	54·7	744·8	54·9
Jan. 24	0	0		26·70	534·3	56·3	743·7	56·5
	2	0		28·15	537·2	56·9	741·1	57·2
	4	0		26·26	539·0	57·4	750·6	58·2
	6	0		24·87	539·9	57·0	750·1	58·3
	8	0		25·14	540·8	57·7	751·8	59·1
	10	0		25·46	542·1	57·9	754·6	59·5
	18	0	25	22·43	534·2	55·9	741·9	57·5
	20	0		24·60	535·0	55·9	751·2	57·8
	22	0		25·43	531·5	55·7	758·9	57·0
Jan. 25	0	0		27·19	532·5	58·0	763·5	60·7
	2	0		29·65	536·3	58·8	767·2	61·1
	4	0		28·07	540·9	59·8	775·5	61·6
	6	0		26·10	538·9	58·9	771·1	60·5
	8	0		25·95	539·4	59·4	772·6	61·2
	10	0		25·09	535·3	59·4	768·0	61·3
Jan. 25	18	0	25	25·27	537·4	59·3	757·9	61·0
	20	0		24·87	537·9	58·8	760·3	60·3
	22	0		24·06	530·9	58·3	765·5	60·0
Jan. 26	0	0		27·22	531·6	58·9	769·8	60·8
	2	0		28·94	535·7	59·7	759·1	61·4
	4	0		26·48	537·6	59·4	765·9	61·0
	6	0		25·76	538·3	59·2	762·0	61·0
	8	0		24·10	529·9	59·0	768·2	60·5
	10	0		22·62	534·7	60·0	769·1	62·6
	18	0	25	24·33	540·9	60·7	752·1	62·4
	20	0		24·77	540·5	60·9	751·2	62·5
	22	0		25·27	534·2	60·3	756·6	61·6
Jan. 27	0	0		28·28	536·5	60·7	764·2	62·3
	2	0		29·31	540·3	60·8	757·7	62·5
	4	0		26·55	542·1	60·5	756·9	62·0
	6	0		26·35	541·5	60·2	753·9	61·7
	8	0		25·66	543·4	62·4	747·8	64·0
	10	0		25·41	539·5	63·2	746·5	64·6
	18	0	25	21·31	538·9	57·8	711·5	58·7
	20	0		24·11	539·6	57·9	744·8	59·4
	22	0		23·95	535·4	58·2	758·4	60·0
Jan. 28	0	0		32·72	531·3	58·7	758·2	60·3
	2	0		29·75	537·2	58·8	755·5	60·5
	4	0		29·31	539·9	58·2	765·2	59·6
	6	0		26·66	526·5	56·2	859·4	57·2
	8	0		20·87	524·2	55·6	842·0	57·2
	10	0		20·88	533·1	58·5	805·2	61·0
Jan. 29	18	0	25	24·48	540·6	54·3	723·1	55·0
	20	0		25·34	535·4	54·8	751·6	56·4
	22	0		22·94	531·7	54·6	756·6	55·8
Jan. 30	0	0		26·67	533·3	54·0	755·9	55·4
	2	0		28·54	532·2	57·3	770·1	58·9
	4	0		25·59	542·9	59·8	767·4	61·5
	6	0		24·55	534·9	58·7	767·3	60·0
	8	0		24·10	533·4	56·7	772·1	58·1
	10	0		22·69	537·1	58·8	768·4	61·0
	18	0	25	23·39	538·8	58·3	754·3	60·0
	20	0		24·35	535·7	56·7	757·9	58·4
	22	0		24·00	536·0	56·7	762·4	58·4
Jan. 31	0	0		25·88	530·4	59·0	764·1	60·6
	2	0		26·79	532·2	60·9	765·8	62·3
	4	0		25·39	538·3	61·0	764·1	62·5
	6	0		24·48	531·9	59·0	758·8	60·5
	8	0		25·31	536·6	58·8	751·2	60·0
	10	0		24·04	537·8	59·7	753·9	61·0
	18	0	25	24·03	532·6	54·7	739·5	56·6
	20	0		24·28	538·2	56·8	764·7	59·5
	22	0		25·43	534·5	55·6	762·8	58·0
Feb. 1	0	0		26·94	535·3	54·5	762·0	56·5
	2	0		27·14	536·3	54·9	762·1	56·5
	4	0		24·74	539·2	59·5	762·2	61·3
	6	0		25·41	535·5	58·0	759·9	59·7
	8	0		24·47	537·2	58·3	759·0	60·0
	10	0		23·95	535·9	57·8	757·9	59·7

DECLINATION. Torsion removed, circle reading,—Jan. 23^d 23^h, 4°; 28^d 3^h, 18°; 30^d 23^h, 18°.
BIFILAR. $k=0·0001248$. BALANCE. $k=0·000015$ approximately.

Jan. 31^d 6^h 30^m. Declination reading 25° 17′·88.

Göttingen Mean Time of Declination Observation.				DECLINATION.		BIFILAR.		BALANCE.	
						Corrected.	Thermometer.	Corrected.	Thermometer.
	d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Feb.	1	18	0	25	25·02	538·5	55·0	765·4	57·5
		20	0		24·37	537·8	54·2	760·4	56·6
		22	0		24·64	534·1	52·3	767·4	54·8
Feb.	2	0	0		25·95	538·0	55·0	770·5	57·5
		2	0		28·42	538·3	56·0	762·6	58·3
		4	0		25·09	537·7	55·4	765·5	57·5
		6	0		24·82	536·9	53·0	771·4	55·4
		8	0		25·01	537·6	52·3	770·1	54·7
		10	0		24·60	537·6	53·8	762·2	56·3
		18	0	25	25·11	536·4	48·0	758·3	49·2
		20	0		24·60	539·1	48·9	765·8	51·2
		22	0		24·67	531·8	49·0	766·8	51·2
Feb.	3	0	0		26·99	535·3	50·9	756·8	52·9
		2	0		27·26	540·8	53·9	751·4	55·7
		4	0		25·14	538·0	52·8	754·5	54·6
		6	0		25·11	536·4	49·8	769·1	51·3
		8	0		24·27	539·3	49·9	763·8	52·7
		10	0		23·79	537·8	49·1	767·2	53·0
		18	0	25	24·53	542·0	43·0	763·5	46·7
		20	0		23·03	544·5	47·8	757·2	50·5
		22	0		23·46	538·9	46·8	757·8	49·2
Feb.	4	0	0		24·74	540·1	50·8	748·5	53·2
		2	0		26·57	543·7	53·1	746·1	55·5
		4	0		24·51	545·4	54·5	749·0	57·0
		6	0		23·59	544·7	51·0	753·8	53·5
		8	0		24·47	545·7	53·0	745·5	56·9
		10	0		23·64	545·0	52·9	750·1	56·0
Feb.	5	18	0	25	23·50	556·6	41·3	741·8	43·7
		20	0	25	23·83	534·9	39·8	752·2	42·3
		22	0	25	24·00	530·7	39·1	743·0	41·5
		0	0	25	26·55	538·1	45·5	743·4	47·8
Feb.	6	2	0	25	33·34	539·0	51·6	741·3	53·4
		4	0	25	26·96	546·6	53·4	741·0	55·5
		6	0	25	28·54	539·5	49·8	769·1	51·6
		8	0	25	21·04	532·1	52·1	806·8	54·2
		10	0	24	44·31	538·7	53·2	830·1	55·0
		19	0	25	23·79	536·8	47·8	736·6	49·6
		20	0		24·17	540·0	48·4	753·1	50·2
		22	0		22·94	543·1	49·9	751·1	51·5
Feb.	7	0	0		27·85	527·7	50·9	750·8	52·3
		2	0		32·64	533·6	54·3	762·4	56·8
		4	0		31·06	544·5	57·2	761·3	59·0
		6	0		26·01	540·9	55·7	776·0	57·0
		8	0		24·91	536·3	55·0	771·7	56·7
		10	0		24·33	537·2	56·2	758·4	58·3
		18	0	25	24·13	533·0	51·9	754·2	53·5
		20	0		24·13	541·1	53·3	755·4	55·4
		22	0		25·95	534·9	52·6	749·4	54·0
Feb.	8	0	0		29·14	533·9	54·8	760·0	56·5
		2	0		30·79	536·6	56·2	761·0	57·6
		4	0		26·97	540·4	57·9	759·1	59·2
		6	0		26·03	540·7	57·6	756·2	59·0
		8	0		25·29	541·3	59·1	747·3	60·7
		10	0		23·86	537·8	58·2	749·7	60·0
Feb.	8	18	0	25	22·02	536·3	55·2	743·6	57·0
		20	0		24·64	536·5	54·7	753·4	56·5
		22	0		23·97	528·9	53·0	759·9	55·0
Feb.	9	0	0		28·00	529·4	56·0	753·2	58·5
		2	0		30·79	533·0	54·5	754·8	56·5
		4	0		29·51	535·7	54·8	771·5	57·2
		6	0		29·48	530·5	50·4	740·4	52·2
		8	0		25·75	537·5	52·2	765·6	55·1
		10	0		25·09	533·4	51·0	767·1	53·5
		18	12	25	26·20	532·1	44·7	755·4	46·6
		20	0		26·08	539·2	47·0	749·2	49·0
		22	0		24·78	532·6	45·8	756·1	47·5
Feb.	10	0	0		28·64	535·2	49·4	752·3	51·1
		2	0		30·13	534·5	49·9	761·5	51·2
		4	0		28·72	540·2	53·7	757·5	55·5
		6	0		25·54	539·7	52·0	764·2	53·4
		8	0		22·27	536·5	52·9	767·5	54·6
		10	0		24·77	541·1	53·7	756·9	55·5
		18	0	25	24·40	536·8	48·6	744·8	50·5
		20	0		24·64	537·4	48·7	754·9	50·6
		22	0		23·46	527·8	47·3	739·6	49·0
Feb.	11	0	0		26·69	533·0	46·1	740·4	48·0
		2	0		28·50	530·1	45·6	737·8	47·3
		4	0		25·78	534·9	44·9	724·2	45·8
		6	3		24·60	535·5	44·9	727·8	45·6
		8	0		25·27	541·2	48·0	739·0	50·5
		10	0		22·69	541·7	52·5	743·7	54·2
Feb.	12	18	0	25	19·73	535·7	43·8	721·1	44·8
		20	0		21·04	549·0	46·3	728·7	48·5
		22	0		24·10	535·1	46·0	735·3	47·5
Feb.	13	0	0		28·00	536·1	49·8	733·3	52·2
		2	0		29·98	539·6	50·0	731·6	50·5
		4	0		30·71	541·8	50·4	751·0	52·0
		6	0		28·94	536·5	49·7	765·4	50·7
		8	0		25·83	541·5	51·7	760·0	53·5
		10	0		8·17	531·1	50·9	770·0	52·9
		18	20	25	26·30	531·0	45·6	728·0	47·1
		20	0		29·88	529·9	45·8	697·7	48·1
		22	0		23·97	538·1	46·7	724·6	48·8
Feb.	14	0	0		29·51	535·8	46·0	741·8	48·1
		2	0		32·62	535·8	46·0	761·1	48·6
		4	0		26·06	537·0	47·2	776 4	49·5
		6	0		24·10	533·0	44·7	778·1	46·3
		8	0		21·44	526·1	44·9	773·0	47·7
		10	0		22·67	522·9	45·2	756·9	48·6
		18	0	25	22·99	526 8	37·2	742·5	40·0
		20	0		24·55	537·0	40·1	751·3	43·5
		22	0		24·60	534·4	40·6	750·0	44 0
Feb.	15	0	0		26·37	537·8	43·7	743·3	46·1
		2	0		29·42	539·2	47·4	740·2	49·0
		4	0		27·19	538·4	51·4	755·5	52·6
		6	0		21·49	539·1	51·3	765·1	52·6
		8	0		24·64	541·1	52·0	755·8	54·0
		10	0		21·24	538·0	51·0	742·8	53·0

DECLINATION. Torsion removed, circle reading,—Feb. 3^{d} 10^{h}, 28° ; 6^{d} 23^{h}, 28° ; 13^{d} 23^{h}, 28°.
BIFILAR. k=0·0001248. BALANCE. k=0·000015 approximately.

Feb. 6^{d} 19^{h}. Observation 1^{h} late.
Feb. 13^{d} 18^{h} 22^{m}. The Balance magnet vibrating considerably.

Göttingen Mean Time of Declination Observation.			Declination.		Bifilar.		Balance.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Feb. 15	18	0	25	24·20	530·0	40·0	750·2	42·6
	20	0		24·40	538·9	44·9	750·1	47·9
	22	0		24·77	533·4	42·4	750·2	45·1
Feb. 16	0	0		27·70	534·0	46·1	744·3	48·6
	2	0		29·31	543·3	50·2	730·0	51·8
	4	0		26·96	544·6	52·7	748·7	54·0
	6	0		27·34	542·0	50·2	756·1	51·5
	8	0		14·06	543·8	50·1	767·8	52·3
	10	0		23·19	537·8	50·3	760·6	52·7
	18	0	25	24·64	533·1	41·4	737·8	44·0
	20	0		24·53	541·9	45·2	743·7	48·5
	22	0		24·48	541·5	46·4	742·1	49·7
Feb. 17	0	0		26·37	539·1	47·9	737·2	50·1
	2	0		26·70	540·7	53·0	742·8	55·1
	4	0		28·07	541·1	54·1	748·9	55·7
	6	0		28·07	533·3	51·8	770·2	53·1
	8	0		24·94	540·8	51·0	766·6	53·4
	10	0		23·50	539·2	49·4	758·4	51·8
	18	0	25	23·43	529·3	37·9	707·1	41·0
	20	0		24·25	539·7	41·3	752·8	44·9
	22	0		24·17	530·5	38·0	750·8	41·2
Feb. 18	0	0		26·06	536·5	44·5	741·6	47·5
	2	0		27·80	541·7	48·8	733·3	50·1
	4	0		25·85	542·9	52·1	737·3	52·8
	6	0		26·62	539·3	51·9	745·0	52·5
	8	0		22·11	540·8	52·0	752·6	53·5
	10	0		24·00	540·8	51·1	746·8	53·0
Feb. 19	18	0	25	22·82	530·1	38·1	730·3	39·5
	20	0		23·56	541·3	43·0	734·2	44·7
	22	0		23·71	536·4	43·1	739·3	44·4
Feb. 20	0	0		25·95	535·4	47·0	732·4	48·5
	2	0		27·60	535·7	49·2	736·2	50·7
	4	0		25·65	541·0	50·1	745·4	51·6
	6	0		23·32	530·9	46·6	770·7	48·5
	8	0		24·47	539·4	47·4	758·9	49·5
	10	0		23·12	540·7	49·7	741·8	50·3
	18	0	25	22·85	535·6	45·9	741·2	48·2
	20	0		22·87	538·4	48·2	740·6	50·0
	22	0		24·53	531·3	46·8	740·2	48·5
Feb. 21	0	0		29·44	531·9	47·7	734·0	49·4
	2	0		28·68	536·2	50·0	737·3	51·8
	4	0		26·77	541·0	52·7	746·2	54·5
	6	0		24·47	541·2	51·7	745·8	53·4
	8	0		24·53	541·0	52·1	743·5	53·6
	10	0		23·12	536·4	51·9	741·7	53·3
	18	0	25	23·63	537·3	49·5	740·1	51·3
	20	0		23·07	538·0	51·9	742·0	54·0
	22	0		24·47	531·7	50·2	739·7	51·9
Feb. 22	0	0		29·38	533·1	52·2	727·4	54·0
	2	0		29·55	538·8	53·0	733·7	54·7
	4	0		28·59	536·8	52·8	747·0	54·5
	6	0		25·27	538·4	51·4	749·4	53·0
	8	0		24·91	542·5	51·6	749·5	53·4
	10	0		25·24	538·7	51·3	748·2	53·0
Feb. 22	18	0	25	22·65	535·3	47·3	742·0	50·2
	20	0		23·39	539·8	50·2	744·2	52·0
	22	0		25·05	535·3	49·4	740·6	51·0
Feb. 23	0	0		27·96	535·0	49·6	741·5	51·3
	2	0		28·84	540·1	51·7	735·0	53·0
	4	0		27·09	540·6	51·7	743·8	53·1
	6	0		26·17	543·2	50·8	744·3	52·5
	8	0		25·09	540·1	50·3	750·5	52·0
	10	0		25·12	538·3	50·5	747·9	51·9
	18	0	25	21·24	544·1	50·8	725·2	52·2
	20	0		21·51	543·9	50·8	723·0	52·1
	22	0		27·38	528·7	49·7	725·8	51·2
Feb. 24	0	0		32·27	539·1	50·7	727·8	52·2
	2	0		34·68	538·6	51·1	735·9	52·5
	4	0		43·60	535·2	51·7	794·1	53·0
	6	0		30·62	528·9	52·0	878·6	53·4
	8	0		26·79	523·5	52·9	887·8	54·6
	10	0		20·16	527·0	52·7	783·2	54·2
	18	0	25	27·85	539·2	53·4	701·2	55·8
	20	0		25·58	534·5	53·8	734·2	55·8
	22	0		26·35	529·3	53·0	743·4	55·0
Feb. 25	0	0		28·03	528·2	52·9	745·9	54·9
	2	0		28·70	535·7	53·1	748·6	54·9
	4	0		27·70	536·9	52·4	748·5	54·0
	6	0		27·19	534·5	51·3	750·1	53·0
	8	0		25·95	536·1	52·2	742·8	53·8
	10	0		16·40	544·3	53·0	743·2	54·7
Feb. 26	18	0	25	25·68	536·6	42·7	745·5	44·6
	20	0		25·41	536·4	43·6	741·2	45·5
	22	0		26·25	533·7	44·2	742·5	46·0
Feb. 27	0	0		27·67	536·5	47·0	742·1	48·5
	2	0		27·56	542·0	49·5	750·3	50·7
	4	0		25·52	542·7	51·7	745·5	53·0
	6	6		24·74	539·7	50·2	739·0	51·3
	8	0		23·86	538·7	48·9	749·1	50·5
	10	0		24·60	537·0	48·9	749·9	50·6
	18	0	25	23·81	535·0	43·9	745·7	46·0
	20	0		23·19	539·5	46·8	742·1	48·8
	22	0		25·95	532·6	45·8	740·0	47·5
Feb. 28	0	0		31·93	533·9	46·7	729·2	48·1
	2	0		28·86	544·3	49·8	734·0	51·0
	4	0		25·46	540·7	51·3	742·3	52·3
	6	0		24·67	538·0	50·3	739·0	51·3
	8	0		23·93	540·1	50·1	739·7	51·3
	10	0		23·93	539·0	49·3	739·0	50·7
	18	0	25	23·06	538·8	44·6	745·7	46·7
	20	0		23·53	538·2	44·6	739·1	46·9
	22	0		24·06	534·4	44·2	735·9	46·5
Mar. 1	0	0		25·34	533·6	45·7	731·9	47·5
	2	0		26·66	540·1	51·2	731·7	52·5
	4	0		25·95	538·0	52·1	731·3	53·2
	6	0		24·60	537·5	51·0	734·7	52·0
	8	0		24·60	539·6	49·1	736·6	50·5
	10	0		24·20	538·8	49·2	734·8	50·8

DECLINATION. Torsion removed, circle reading,—Feb. 20^{d} 23^{h}, 28°; 27^{d} 23^{h}, 28°.
BIFILAR. k=0·0001248. BALANCE. k=0·000015 approximately.

Göttingen Mean time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
d.	h.	m.	°	′	Corrected. Sc. Div.	Thermometer. °	Corrected. Mic. Div.	Thermometer. °
Mar. 1	18	0	25	22·67	540·9	44·9	741·7	47·3
	20	0		23·26	541·5	45·9	736·2	48·0
	22	0		23·73	534·6	44·8	742·0	46·8
Mar. 2	0	0		27·94	532·5	47·7	729·7	49·5
	2	0		27·96	536·8	48·2	735·3	49·8
	4	0		26·01	543·2	50·9	739·7	52·3
	6	0		24·60	540·1	50·8	738·0	52·1
	8	0		24·47	541·1	50·2	736·7	52·0
	10	0		24·20	541·0	50·1	735·9	52·0
	18	0	25	24·47	540·1	46·7	742·2	49·0
	20	0		23·93	540·5	47·0	735·2	49·0
	22	0		23·26	535·9	46·3	742·6	48·5
Mar. 3	0	0		24·96	534·3	49·0	735·6	50·9
	2	0		27·71	540·9	52·9	731·0	54·1
	4	0		27·43	543·2	54·9	727·6	56·0
	6	0		25·78	540·6	53·6	727·9	54·6
	8	0		23·54	540·3	51·8	728·3	53·3
	10	0		23·21	537·8	50·2	735·4	52·0
	18	0	25	23·23	534·6	43·0	706·7	45·0
	20	0		23·56	539·7	43·6	738·4	45·9
	22	0		23·04	537·9	44·1	740·2	46·5
Mar. 4	0	0		26·48	535·9	47·2	717·4	48·6
	2	0		29·58	543·0	51·0	702·7	51·6
	4	0		28·70	544·5	53·8	712·2	54·0
	6	0		27·24	545·7	54·6	718·9	54·5
	8	0		27·24	539·0	53·4	747·0	54·0
	10	0		19·81	534·8	52·0	755·4	53·0
Mar. 5	18	0	25	22·96	528·4	45·6	729·4	46·8
	20	0		30·37	537·3	45·8	712·2	47·0
	22	0		24·84	531·0	46·1	725·3	47·3
Mar. 6	0	0		29·19	533·6	49·8	718·7	50·5
	2	0		29·88	543·1	52·5	719·4	52·5
	4	0		27·26	545·5	56·0	720·6	56·0
	6	0		28·10	535·1	56·1	740·6	56·2
	8	0		25·75	542·3	56·7	760·4	57·2
	10	0		15·23	536·4	55·9	726·1	56·8
	18	0	25	17·61	525·4	55·2	661·6	58·0
	20	0		25·90	530·5	56·0	705·4	58·5
	22	0		24·22	527·7	56·4	721·1	58·1
Mar. 7	0	0		30·05	521·5	57·6	739·7	58·8
	2	0		31·33	536·4	58·2	759·5	59·4
	4	0		39·46	547·4	58·3	803·5	59·5
	6	0		29·80	546·8	57·6	887·8	58·5
	8	0		32·40	513·5	55·5	1028·2	57·4
	10	0		25·83	528·6	54·8	813·1	57·5
	18	0	25	22·92	530·2	46·2	761·4	48·3
	20	0		23·73	527·7	45·9	764·4	48·0
	22	0		24·25	523·9	45·6	759·4	47·8
Mar. 8	0	0		27·13	521·7	48·7	744·0	50·0
	2	0		28·64	532·7	52·6	728·6	53·3
	4	0		26·91	541·2	56·0	723·9	55·9
	6	0		25·49	538·6	57·6	719·2	57·0
	8	0		25·16	538·5	56·6	727·2	56·5
	10	0		24·60	535·8	54·2	736·4	55·0
Mar. 8	18	0	25	23·70	533·7	47·3	754·9	49·5
	20	0		22·90	533·4	46·8	756·6	48·8
	22	0		24·01	525·9	45·8	757·9	47·8
Mar. 9	0	0		28·20	530·0	47·7	746·6	49·0
	2	0		28·25	540·5	52·2	726·8	52·9
	4	0		26·62	541·5	54·8	724·7	55·0
	6	0		25·73	540·5	53·9	750·3	54·5
	8	0		25·92	533·9	53·6	760·5	54·6
	10	0		24·17	544·4	54·0	736·5	55·2
	18	0	25	23·30	540·0	50·1	742·2	52·0
	20	0		23·32	536·2	50·4	744·4	52·6
	22	0		23·46	527·8	49·4	735·7	50·9
Mar. 10	0	0		27·33	526·5	49·0	725·4	50·5
	2	0		28·17	534·8	50·6	732·1	51·9
	4	0		26·03	540·1	52·3	723·2	53·4
	6	0		24·13	539·6	52·4	733·0	53·5
	8	0		24·74	538·9	51·8	733·3	52·9
	10	0		23·07	537·0	51·7	736·6	53·0
	18	0	25	22·92	536·3	48·8	725·9	50·3
	20	0		22·85	538·0	49·4	730·0	50·7
	22	0		23·86	532·1	49·8	725·5	50·6
Mar. 11	0	0		26·89	531·8	52·2	716·4	53·0
	2	0		29·76	537·8	53·8	711·9	54·4
	4	0		29·66	540·6	56·0	717·9	56·3
	6	0		27·88	537·5	56·3	725·0	56·9
	8	0		21·81	546·3	55·0	725·4	55·9
	10	0		17·69	529·8	54·6	735·5	55·9
Mar. 12	18	0	25	22·25	527·7	49·3	699·5	50·8
	20	0		29·06	516·2	50·2	721·1	52·0
	22	0		25·99	524·1	50·9	726·5	52·5
Mar. 13	0	0		28·27	525·0	52·9	734·9	54·2
	2	0		29·58	531·8	54·0	731·5	55·0
	4	0		31·23	539·9	53·4	740·0	55·0
	6	0		26·94	539·4	54·9	760·0	57·0
	8	0		21·81	537·5	52·9	739·4	54·5
	10	0		23·77	533·3	51·0	734·3	52·5
	18	0	25	21·51	528·7	47·9	695·7	49·7
	20	0		23·41	527·8	47·7	710·4	49·7
	22	0		24·01	525·0	46·9	733·8	49·6
Mar. 14	0	0		25·58	528·5	51·0	734·3	51·9
	2	0		28·77	535·3	54·8	714·6	55·0
	4	0		26·73	534·6	56·2	724·4	56·5
	6	0		23·86	534·9	55·7	745·3	56·1
	8	0		22·25	535·3	53·8	724·6	54·7
	10	0		21·73	537·1	52·1	723·6	53·3
	18	0	25	22·72	532·1	47·4	730·4	49·1
	20	0		22·02	529·9	46·9	740·2	48·9
	22	0		21·15	530·0	46·7	735·5	48·3
Mar. 15	0	0		24·48	531·1	49·4	723·0	50·2
	2	0		27·49	535·9	53·9	712·6	54·1
	4	0		24·80	543·2	57·8	707·5	57·5
	6	0		23·03	539·4	57·7	703·9	57·5
	8	0		23·29	534·9	56·1	717·0	56·5
	10	0		23·46	534·8	53·8	714·0	54·5

DECLINATION. Torsion removed, circle reading,—March 10^d 3^h, 36°; 13^d 23^h, 38°.
BIFILAR. $k=0·0001248$. BALANCE. $k=0·000015$ approximately.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.		Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.						Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°	d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Mar. 15	18	0	25	22·18	526·5	45·1	707·2	46·5	Mar. 22	18	0	25	23·14	543·1	53·3	682·0	53·8
	20	0		20·95	526·7	43·7	710·1	45·1		20	0		24·60	544·3	53·0	690·0	53·2
	22	0		21·01	520·3	43·0	709·4	44·4		22	0		24·04	530·6	52·2	690·8	52·5
Mar. 16	0	0		26·42	523·1	43·2	705·5	44·2	Mar. 23	0	0		28·07	531·3	52·3	689·3	52·5
	2	0		28·50	534·4	43·5	709·3	44·4		2	0		31·83	533·2	53·2	695·9	53·4
	4	0		25·43	541·8	43·7	719·1	44·3		4	0		29·01	540·5	54·4	701·0	54·2
	6	0		24·04	531·9	43·6	731·5	44·1		6	0		24·87	535·6	54·2	724·6	54·5
	8	0		21·84	534·2	43·5	730·1	44·0		8	0		23·43	539·3	54·3	717·9	54·3
	10	0		19·83	531·5	43·4	730·3	44·0		10	0		24·10	536·9	53·7	702·6	54·0
	18	0	25	21·68	535·5	44·7	715·1	44·9		18	0	25	23·97	531·6	46·8	689·3	47·7
	20	0		20·03	532·0	44·9	720·1	45·0		20	0		22·96	531·4	46·2	705·1	47·0
	22	0		20·57	521·0	45·1	720·8	45·2		22	0		21·98	527·2	46·0	711·2	46·6
Mar. 17	0	0		26·39	520·8	45·5	701·1	45·5	Mar. 24	0	0		27·87	521·3	46·3	707·5	46·7
	2	0		27·85	531·9	46·2	708·4	46·0		2	0		30·27	529·0	46·8	703·2	47·0
	4	0		27·26	538·7	46·9	717·6	46·6		4	0		27·36	540·4	46·7	702·7	46·9
	6	0		26·99	537·6	47·2	722·6	47·0		6	0		24·00	538·0	46·1	704·5	46·4
	8	0		25·81	536 7	47·0	750·6	46·9		8	0		23·93	536·4	45·8	702·8	46·0
	10	0		21·24	536·0	46·8	746·2	46·8		10	0		23·86	537·0	45·3	703·5	45·6
	18	0	25	24·17	536·6	45·8	702·8	46·0		18	0	25	23·26	536·6	44·5	698·9	44·8
	20	0		23·26	535·3	45·5	710·2	45·9		20	0		22·58	538·7	44·3	702·5	44·7
	22	0		23·39	527·3	45·8	709·3	45·9		22	0		21·19	532·2	44·3	703·0	44·6
Mar. 18	0	0		31·14	527·1	47·2	701·9	47·0	Mar. 25	0	0		26·59	529·5	45·2	694·7	45·2
	2	0		34·26	539·3	50·0	701·2	49·1		2	0		29·80	535·0	47·2	684·6	46·5
	4	0		35·47	535·8	53·0	733·2	51·7		4	0		27·85	540·4	48·1	693·7	47·3
	6	0		13·91	559·9	53·7	780·0	52·5		6	0		24·60	541·2	47·9	699·4	47·0
	8	0		24·82	535·5	53·0	748·3	52·3		8	0		23·70	539·6	46·7	696·8	46·1
	10	0		23·39	529·8	51·3	737·0	51·2		10	0		23·66	539·2	44·8	701·6	45·0
Mar. 19	18	0	25	24·28	532·8	44·7	704·2	45·2	Mar. 26	18	0	25	22·11	538·7	37·2	686·4	38·0
	20	0		22·79	533·0	44·2	702·8	44·8		20	0		21·76	537·6	36·7	692·9	37·5
	22	0		23·79	527·4	44·4	701·8	44·9		22	0		22·33	527·6	36·6	694·1	37·3
Mar. 20	0	0		29·46	528·6	46·0	697·6	46·0	Mar. 27	0	0		28·39	523·7	36·8	691·0	37·5
	2	0		33·34	531·5	48·0	700·7	47·4		2	0		30·12	533·4	37·0	686·3	37·5
	4	0		31·12	539·8	48·1	711·8	47·6		4	0		26·72	536·9	37·1	699·9	37·7
	6	0		25·41	540·2	47·7	721·8	47·3		6	0		24·69	538·6	37·0	698·4	37·5
	8	0		22·47	541·4	46·6	717·8	46·0		8	0		24·01	541·9	36·7	692·7	37·1
	10	0		19·15	531·9	45·7	712·6	46·0		10	0		23·86	540·2	36·1	693·3	36·8
	18	0	25	22·65	536·2	43·7	699·7	44·2		18	0	25	21·79	539·3	35·4	686·5	36·0
	20	0		23·73	533·5	43·8	698·1	43·8		20	0		20·32	538·1	35·4	689·9	36·0
	22	0		24·00	525·4	44·0	701·6	44·5		22	0		21·76	530·2	35·9	685·7	36·4
Mar. 21	0	0		25·88	528·8	46·2	697·3	46·0	Mar. 28	0	0		26·06	528·8	37·9	678·5	37·9
	2	4		30·45	531·6	48·7	688·4	47·9		2	0		29·44	536·2	40·0	681·7	39·5
	4	0		28·74	536·7	50·1	700·3	49·2		4	0		25·21	539·6	42·3	687·2	41·5
	6	0		27·29	543·5	50·1	710·2	50·0		6	0		23·10	542·7	43·4	687·0	42·2
	8	0		24·58	545·6	50·9	711·4	50·1		8	0		22·99	542·1	42·7	682·6	41·9
	10	0		24·22	536·2	50·7	707·3	50·4		10	0		23·12	543·6	40·9	685·0	40·8
	18	0	25	23·32	542·4	47·4	690·2	48·0		18	0	25	22·27	537·5	35·0	677·6	36·1
	20	0		22·72	536·7	47·4	694·7	47·8		20	0		19·22	539·7	34·1	676·3	35·1
	22	0		22·23	532·5	47·6	694·0	47·7		22	0		19·42	533·0	34·1	679·1	35·0
Mar. 22	0	0		30·43	527·0	48·4	688·4	48·4	Mar. 29	0	0		24·20	531·8	37·2	661·6	37·3
	2	0		35·67	548·3	51·6	685·8	50·7		2	0		31·03	530·1	41·2	666·5	40·5
	4	0		32·28	542·9	54·5	714·5	53·4		4	0		32·22	529·4	45·1	703·4	44·2
	6	0		25·96	547·3	55·5	743·3	54·5		6	0		27·38	544·4	48·1	725·3	47·3
	8	0		26·22	539·7	55·0	723·6	54·3		8	0		19·42	538·4	47·8	747·5	47·2
	10	0		20·87	548·0	56·0	724·4	56·0		10	0		6·44	550·5	46·7	678·9	46·7

DECLINATION. Torsion removed, circle reading,—March 17^{d} 3^{h}, 26°; 20^{d} 23^{h}, 21°.
BIFILAR. k=0·0001248. **BALANCE.** k=0·000015 approximately.

March 16^{d}. The use of the copper stove was discontinued after this during the Daily Observations.
March 29^{d} 0^{h}. The floor of the Observatory being washed.

Göttingen Mean Time of Declination Observation.			Declination.		Bifilar.		Balance.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Mar. 29	18	0	25	21·93	528·0	39·2	662·5	39·7
	20	0		21·31	526·3	38·0	669·4	38·5
	22	0		20·54	518·7	38 0	672·9	38·4
Mar. 30	0	0		24·77	521·8	39·6	663·6	40·0
	2	0		28·55	531·8	42·1	684·3	42·2
	4	0		27·76	538·5	43·9	678·9	44·0
	6	0		24·67	536·0	45·0	698·6	45·0
	8	0		19·33	542·3	45·1	693·7	45·1
	10	0		21·37	538·6	45·4	681·1	45·4
	18	0	25	21·41	540 5	46·7	662·8	46·8
	20	0		20·67	533·7	46·6	676·2	46·8
	22	0		20·23	525·1	47·3	674·1	47·4
Mar. 31	0	0		25·41	527·1	48·8	656·4	48·9
	2	0		29·15	536·0	50·7	659·0	50·8
	4	0		26·77	545·3	52·4	666·6	52·4
	6	0		24·80	542·1	52·9	678·1	52·7
	8	0		23·79	541·1	52·4	678·3	52·3
	10	0		23·93	539·3	51·3	673·5	50·4
	18	0	25	22·99	539·5	49·0	668·1	49·2
	20	0		21·35	537·2	48·9	670·2	49·0
	22	0		22·58	525·9	49·1	670·0	49·0
Apr. 1	0	0		28·18	525·3	50·2	656·4	50·0
	2	0		32·40	540·4	52·0	658 8	51·9
	4	0		28·55	543·3	52·9	672·6	52·6
	6	0		25·19	546·3	53·6	681·5	53·4
	8	0		24·00	541·5	53·3	679·6	53·2
	10	0		23·93	539·3	52·8	676·3	52·5
Apr. 2	18	0	25	19·93	543·9	49·6	649·9	49·5
	20	0		20·55	535·3	49·3	663·0	49·2
	22	0		22·85	525·5	50·0	668·4	49·8
Apr. 3	0	0		30·34	527·9	51·7	649·7	51·5
	2	0		35·77	532·2	53·2	661·1	53·3
	4	0		29·95	535·8	54·8	685·4	54·8
	6	0		26·62	543·6	55·8	690·9	55·5
	8	0		25·02	542·5	55·0	683·4	54·6
	10	0		20·77	528·1	53·4	679·6	53·0
	18	0	25	24·10	534·7	47·5	676·3	47·5
	20	0		22·69	532·2	47·0	684·4	46·8
	22	0		23·27	523·9	46·9	675·9	46·6
Apr. 4	0	0		29·85	521·8	47·4	660·9	47·2
	2	0		34·09	533·4	48·0	650·5	47·8
	4	0		29·58	538·2	48·8	674·2	48·5
	6	0		25·95	539·2	48·9	686·3	48·5
	8	0		24.53	542·9	48·6	687·4	48·4
	10	0		21·91	538·6	48·0	680·8	47·9
	18	0	25	20·77	543·2	46·2	660·0	46·2
	20	0		21·49	543·0	45·9	665·5	46·0
	22	0		23·93	533·6	46·0	666·3	46·0
Apr. 5	0	0		28·42	527·1	46·8	650·3	46·8
	2	0		36·06	549·5	47·7	657·7	47·4
	4	0		34·55	555·9	48·3	737·7	48·3
	6	0		23·56	592·1	49·8	1065·6	49·4
	8	0		16·57	509·4	50·2	897·1	49·8
	10	0		20·47	468·1	49·8	679·5	50·0
Apr. 5	18	0	25	14·23	515·4	45·3	566·9	46·9
	20	0		23·63	519·2	44·6	563·5	45·5
	22	0		28·64	504·6	44·6	633·5	45·3
Apr. 6	0	0		34·82	521·1	45·2	701·8	46·6
	2	0		41·98	533·5	46·5	746·1	46·5
	4	0		40·91	555·1	49·0	804·9	48·5
	6	0		32·69	543·4	50·0	803·3	49·2
	8	0		26·35	540·3	49·6	726·9	49·0
	10	5		8·60	521·8	49·0	735·4	48·6
	18	0	25	21·68	527·6	46·8	607·8	47·5
	20	0		21·91	530·1	45·8	659·3	46·5
	22	0		24·65	521·6	46·1	678·2	46·7
Apr. 7	0	0		29·33	518·5	47·0	675·2	47·2
	2	0		32·51	527·0	48·8	692·3	48·4
	4	0		32·30	537·7	50·1	708·1	49·5
	6	0		20·47	538·8	50·9	765·1	50·0
	8	0		19 10	538·7	50·8	743·9	50·1
	10	0		18·73	536·4	50·3	694·8	50·6
	18	0	25	23·90	544·5	43·5	626·0	44·5
	20	0		25·38	528·6	42·9	659·9	43·9
	22	0		23·59	522·7	43·7	681·1	44·4
Apr. 8	0	0		28·15	524·1	45·3	683·3	45·4
	2	0		30·99	528·4	46·9	696·2	46·5
	4	0		29·24	542·9	48·7	716·3	47·7
	6	0		16·62	561·0	48·0	773·8	47·5
	8	0		20·67	543·2	46·7	756·7	46·5
	10	0		22·30	536·7	45·2	716·5	45·5
Apr. 9	18	0	25	20·03	530·5	38·2	655·5	39·2
	20	0		23·39	528·5	37·6	668·3	38·5
	22	0		24·64	522·0	38·0	679·5	38·6
Apr. 10	0	0		25·83	520·9	39·2	673·4	39·7
	2	0		28·00	529·1	41·2	674·5	41·2
	4	0		26·62	533·9	42·6	682·6	42·1
	6	0		24·35	539·7	43·3	695·8	42·6
	8	0		22·90	540·2	42·2	691·2	42·0
	10	0		23·98	539·3	40·8	692·2	41·0
	18	0	25	22·55	532·4	34·6	679·2	35·5
	20	0		20·07	528·9	34·2	689·5	35·0
	22	0		24·67	518·9	34·8	697·3	35·5
Apr. 11	0	0		29·04	526·6	36·4	678·2	36·6
	2	0		29·46	536·0	38·7	676·3	38·4
	4	0		26·42	539·3	41·0	687·6	40·5
	6	0		24·08	547·2	41·6	688·9	41·0
	8	0		16·10	527·4	40·8	714·5	40·5
	10	0		22·45	535·4	39·3	706·6	39·6
	18	0	25	22·45	538·3	33·7	682·3	34·8
	20	0		20·84	533·9	33·2	682·0	34·3
	22	0		23·19	521·5	34·3	690·7	35·0
Apr. 12	0	0		27·96	527·6	36·5	677·8	36·6
	2	0		29·88	542·5	39·1	677·1	38·1
	4	0		28·07	559·5	42·1	690·1	41·5
	6	0		29·01	534·4	42·8	786·5	42·2
	8	0		23·07	537·0	41·9	800·7	41·7
	10	0		18·55	542·2	40·7	712·5	41·5

DECLINATION. Torsion removed, circle reading,—March 31^{d} 3^{h}, 14°; April 3^{d} 23^{h}, 18°; 10^{d} 23^{h}, 22°.
BIFILAR. k=0·0001248. BALANCE. k=0·000015 approximately.

April 3^{d}. Workmen making and laying carpets in the Observatory, at intervals, since March 29^{d}.

Göttingen Mean Time of Declination Observation.			Declination.		Bifilar.		Balance.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Apr. 12	18	0	25	23·26	524·4	35·3	637·9	36·2
	20	0		21·35	532·5	35·3	669·5	36·1
	22	0		23·10	523·6	36·3	691·6	36·9
Apr. 13	0	0		28·94	523·3	38·6	685·2	38·6
	2	0		30·65	539·7	40·9	680·5	40·5
	4	0		29·78	539·7	42·6	703·8	41·9
	6	0		25·04	542·3	42·4	719·9	42·0
	8	0		23·39	545·1	41·7	696·9	41·5
	10	0		20·43	551·9	40·6	666·9	41·0
	18	0	25	21·71	527·1	38·7	677·2	39·4
	20	0		22·50	539·3	40·4	638·0	40·5
	22	0		21·84	529·2	43·0	671·4	42·5
Apr. 14	0	0		29·65	519·1	46·8	669·3	45·4
	2	0		32·87	528·3	50·5	663·5	48·6
	4	0		27·43	544·7	53·2	677·4	51·1
	6	0		24·60	552·4	54·7	727·3	52·7
	8	0		21·91	546·9	53·9	730·8	52·5
	10	0		21·58	533·1	52·8	646·0	52·0
	18	0	25	26·10	532·1	49·4	670·1	49·5
	20	0		19·09	530·3	49·0	671·4	49·3
	22	0		22·77	514·4	50·1	692·4	49·9
Apr. 15	0	0		28·17	523·4	51·7	680·4	51·0
	2	0		30·94	534·8	53·7	685·3	52·6
	4	0		28·30	535·3	54·4	708·9	53·5
	6	0		17·51	549·9	54·0	722·7	53·4
	8	0		23·30	542·0	52·8	710·6	52·4
	10	0		20·94	537·8	51·5	704·9	51·5
Apr. 16	18	0	25	20·65	536·9	46·8	684·3	48·0
	20	0		19·93	533·9	47·8	693·7	48·0
	22	0		21·82	522·6	49·3	688·7	49·0
Apr. 17	0	0		27·78	524·4	51·9	666·9	51·0
	2	0		31·29	536·8	54·7	660·5	53·3
	4	0		28·65	542·7	57·2	664·1	55·6
	6	0		26·23	555·1	58·6	680·8	57·0
	8	0		21·31	548·9	58·2	680·1	56·5
	10	0		23·36	543·3	55·9	677·9	55·2
	18	0	25	24·50	531·2	49·0?	646·8	50·0?
	20	0		20·70	534·2	48·2	665·0	49·5
	22	0		24·72	519·3	49·8	676·3	49·8
Apr. 18	0	0		28·95	526·0	51·7	670·3	51·3
	2	0		......	537·8	54·2	670·7	53·4
	4	0		28·14	550·7	55·7	677·3	54·7
	6	0		25·72	549·8	55·4	739·6	54·6
	8	0		20·57	554·1	54·8	731·9	54·5
	10	0		22·30	545·7	54·0	716·8	53·7
	18	0	25	20·52	537·8	51·4	681·2	51·4
	20	0		19·84	535·5	51·7	693·3	51·5
	22	0		21·44	525·2	52·6	689·3	52·3
Apr. 19	0	0		27·53	524·7	55·0	684·1	54·4
	2	0		30·49	532·8	58·4	674·4	57·0
	4	0		27·36	546·5	60·3	678·3	58·8
	6	0		19·93	544·6	61·2	703·2	59·7
	8	0		23·73	546·6	60·2	684·7	59·2
	10	0		23·09	543·8	58·7	683·9	58·5
Apr. 19	18	0	25	21·24	533·9	53·8	677·7	54·5
	20	0		18·59	538·5	52·2	675·7	52·8
	22	0		19·71	530·6	52·7	680·4	53·0
Apr. 20	0	0		25·52	527·4	54·8	684·3	54·8
	2	0		28·81	534·2	56·1	669·7	55·6
	4	0		25·41	540·7	56·3	691·6	56·0
	6	0		22·49	545·5	56·0	696·6	55·7
	8	0		21·41	546·3	55·6	700·5	55·5
	10	0		21·34	545·6	55·6	694·7	55·9
	18	0		......	......	......	......	......
	20	0		......	......	......	......	......
	22	0	25	20·10	531·9	51·4	687·7	51·4
Apr. 21	0	0		25·31	530·0	53·7	679·9	53·0
	2	0		30·48	540·7	56·0	670·0	55·0
	4	0		24·71	540·4	57·6	701·2	56·5
	6	0		25·21	546·0	58·3	701·9	57·0
	8	0		24·40	546·3	57·7	687·3	56·7
	10	0		24·00	542·4	56·3	685·0	55·9
	18	0	25	21·56	537·4	52·4	689·4	52·5
	20	0		21·15	533·5	52·0	688·4	52·0
	22	0		21·81	530·5	52·0	683·9	52·0
Apr. 22	0	7		24·33	531·6	52·3	673·3	52·3
	2	0		26·45	533·7	53·3	678·7	53·0
	4	0		26·08	534·7	53·6	674·1	53·0
	6	0		24·77	544·2	53·2	682·1	52·9
	8	0		23·86	544·6	52·7	685·0	52·5
	10	0		23·26	543·6	52·0	689·4	51·9
Apr. 23	18	7	25	20·25	534·1	43·0	676·3	44·0
	20	0		19·29	533·6	42·7	680·4	43·7
	22	0		21·84	531·4	43·8	679·5	44·5
Apr. 24	0	0		26·62	533·2	47·6	661·1	47·0
	2	0		29·11	543·6	52·0	638·0	50·6
	4	0		26·75	547·6	54·5	646·3	52·8
	6	0		23·86	545·1	54·7	662·0	53·3
	8	0		23·16	547·1	53·6	664·0	52·5
	10	0		22·79	545·6	52·0	663·2	51·5
	18	0	25	20·74	540·0	47·6	668·0	47·5
	20	0		19·12	537·7	46·8	669·8	47·0
	22	0		22·11	526·9	46·1	666·6	46·4
Apr. 25	0	0		25·68	525·4	45·8	654·6	46·0
	2	0		29·17	538·0	47·1	655·2	47·1
	4	0		25·79	546·6	50·1	651·0	49·1
	6	0		24·17	549·7	52·0	658·9	50·6
	8	0		22·60	549·9	52·0	665·8	50·7
	10	0		21·64	546·8	50·1	666·1	49·6
	18	0	25	23·59	539·3	43·7	663·8	44·5
	20	0		18·62	535·9	43·3	670·5	44·1
	22	0		19·74	525·9	44·0	674·1	44·5
Apr. 26	0	0		25·95	526·7	46·0	664·3	46·0
	2	0		28·42	541·4	48·5	658·1	47·7
	4	0		25·70	549·4	49·0	661·9	48·4
	6	0		23·90	551·1	49·4	667·5	48·9
	8	0		21·91	548·9	48·2	677·9	48·0
	10	0		22·58	546·2	46·8	666·3	46·8

DECLINATION. Torsion removed, circle reading,—April 17^d 23^h, 26½°; 24^d 23^h, 32°.
BIFILAR. $k=0{\cdot}0001248$. BALANCE. $k=0{\cdot}000015$ approximately.

April 18^d 2^h. Declination observation not made in order to make observations of the magnetic dip in various azimuths.

Daily Observations of Magnetometers, April 26—May 10. 1843.

Göttingen Mean Time of Declination Observation.			Declination.		Bifilar.		Balance.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Apr. 26	18	0	25	19·67	537·9	41·9	675·2	42·5
	20	0		17·99	533·8	41·5	677·1	42·3
	22	0		22·13	528·7	42·4	673·4	43·0
Apr. 27	0	0		30·12	531·7	46·0	646·1	45·5
	2	0		30·07	538·5	48·8	646·0	47·6
	4	0		25·92	……*	……	671·1	49·9
	6	0		22·79	……	……	688·3	51·5
	8	0		22·58	548·0	53·5	683·6	51·5
	10	0		23·26	547·7	52·0	676·8	50·9
	18	0	25	17·83	541·6	47·8	675·5	47·9
	20	0		18·95	536·8	47·2	672·0	47·4
	22	0		22·85	529·6	47·2	665·5	47·3
Apr. 28	0	0		27·43	534·9	47·9	661·1	47·7
	2	0		29·85	498·1*	48·8	664·4	48·1
	4	0		25·86	503·9	48·3	672·7	48·1
	6	0		22·58	507·0	48·0	682·2	48·0
	8	0		22·18	504·6	48·1	684·4	48·0
	10	0		21·21	503·5	47·3	671·1	47·3
	18	0	25	19·76	497·1	42·8	680·7	43·5
	20	0		18·21	489·9	42·6	672·5	43·4
	22	0		21·48	486·1	43·8	661·1	44·1
Apr. 29	0	0		20·70	490·4	47·8	653·4	47·0
	2	0		29·95	500·9	52·2	654·8	50·5
	4	0		27·20	504·6	54·6	668·4	52·5
	6	0		24·17	506·8	55·0	669·8	53·3
	8	0		23·27	508·6	53·4	665·5	52·4
	10	0		22·74	509·4	52·0	663·2	51·5
Apr. 30	18	0	25	19·65	498·3	47·2	669·7	47·6
	20	0		18·82	492·7	46·9	666·9	47·2
	22	0		22·06	489·9	48·0	662·3	48·1
May 1	0	0		28·27	491·5	51·7	659·8	50·6
	2	0		29·36	502·1	55·4	651·0	54·0
	4	0		25·38	491·2	58·4	664·9	56·4
	6	0		23·46	509·3	59·8	662·9	57·6
	8	0		22·42	513·4	60·0	669·3	58·0
	10	0		19·22	501·2	57·9	667·5	56·5
	18	0	25	19·15	494·4	49·0	667·5	49·5
	20	0		19·65	487·5	48·1	672·6	48·5
	22	0		21·42	489·6	48·6	668·7	49·0
May 2	0	0		……	485·4	51·7	658·2	51·0
	2	0		……	497·8	55·1	643·9	53·9
	4	0		26·89	506·6	57·6	657·6	55·9
	6	0		……	510·7	59·0	663·9	56·6
	8	0		……	510·3	58·3	667·0	56·5
	10	0		24·74	504·0	55·7	672·0	54·7
	18	0	25	20·63	498·1	48·8	675·8	49·0
	20	0		20·57	498·4	48·3	671·7	48·5
	22	0		22·79	489·9	49·1	670·1	49·1
May 3	0	0		26·50	494·1	51·2	655·7	50·5
	2	0		27·40	504·1	55·3	640·9	53·9
	4	0		25·75	508·4	58·8	644·8	56·5
	6	0		25·02	510·9	60·7	655·9	58·4
	8	0		23·93	511·5	61·4	663·0	59·0
	10	0		23·73	506·0	59·1	661·6	57·5
May 3	18	0	25	20·84	499·4	50·3	673·6	50·6
	20	0		20·05	497·5	49·9	667·1	50·0
	22	0		21·78	491·5	50·9	668·3	50·8
May 4	0	0		27·00	493·1	53·9	644·3	53·0
	2	0		32·28	509·8	56·9	639·1	55·6
	4	0		28·27	502·6	59·4	651·8	57·9
	6	0		25·29	511·6	60·0	664·6	58·6
	8	0		24·31	511·6	59·0	676·7	58·0
	10	0		23·97	507·7	57·6	665·2	57·0
	18	0	25	20·43	496·7	51·3	669·7	51·7
	20	0		19·09	493·3	50·1	666·9	50·5
	22	0		21·98	485·6	50·1	671·3	50·4
May 5	0	0		27·27	490·0	51·4	651·5	51·4
	2	0		28·84	500·0	52·7	658·2	52·3
	4	0		24·53	509·8	53·3	669·0	52·7
	6	0		24·06	516·2	54·3	672·2	53·3
	8	0		25·05	512·6	53·6	673·7	52·7
	10	0		24·84	508·6	51·7	663·1	51·0
	18	0	25	21·28	496·5	47·8	676·8	47·8
	20	0		20·82	494·6	47·3	679·1	47·6
	22	0		21·71	493·1	48·2	657·8	48·4
May 6	0	0		28·00	497·7	50·8	645·0	50·0
	2	0		29·60	508·6	53·6	640·8	52·4
	4	0		……	517·8	55·7	641·1	54·4
	6	0		24·96	516·6	55·9	660·2	54·7
	8	0		21·64	518·0	54·7	701·7	53·9
	10	0		4·10	422·7	53·0	400·2	52·7
May 7	18	0	25	21·84	464·3	48·7	636·1	49·0
	20	0		19·56	478·9	48·6	665·3	48·8
	22	0		22·92	461·6	49·4	692·9	49·5
May 8	0	0		27·20	481·8	50·7	693·0	50·0
	2	0		27·43	484·6	50·8	685·5	50·2
	4	0		24·84	489·5	51·1	692·0	50·5
	6	0		23·30	498·5	52·6	684·0	51·5
	8	0		22·74	509·9	52·9	678·4	51·5
	10	0		22·05	499·2	51·3	674·6	50·5
	18	0	25	19·47	481·7	47·7	604·4	47·5
	20	0		19·17	481·6	48·8	645·7	48·5
	22	0		21·98	480·8	50·3	673·7	49·7
May 9	0	0		27·63	476·5	52·8	660·8	51·5
	2	0		28·35	492·9	54·3	657·1	53·0
	4	0		25·76	496·4	55·6	688·6	54·3
	6	0		22·49	505·1	55·9	695·0	54·6
	8	0		20·00	505·0	56·2	716·6	55·0
	10	0		20·57	505·7	54·2	627·0	53·6
	18	7	25	17·61	482·3	48·7	654·9	49·0
	20	0		18·80	487·3	48·4	643·0	48·6
	22	0		21·75	486·2	49·3	659·0	49·3
May 10	0	0		25·92	487·6	51·7	660·7	50·8
	2	0		30·16	514·7	53·9	664·3	52·7
	4	0		26·13	518·1	55·4	696·9	54·0
	6	0		17·69	531·2	56·3	705·6	54·5
	8	0		23·48	512·0	56·3	708·6	54·7
	10	0		26·59	499·5	54·0	680·4	53·0

Declination. Torsion removed, circle reading,—May 1^{d} 23^{h}, 36°; 6^{d} 5^{h}, 150°†; 10^{d} 3^{h}, 155°.

Bifilar. $k=0·0001205$.* **Balance.** $k=0·000015$ approximately.

---

* April 27^{d} 2^{h}—6^{h}. Bifilar magnet adjusted.

* April 28^{d} 0^{h}—2^{h}. Bifilar magnet again adjusted.

May 2^{d}. Several observations of the Declination not made for the same reason as on April 18^{d}.

† May 6^{d} 4^{h}. Observations made for the zero of the Declination scale when a fibre of the suspension-thread was broken. The torsion was ultimately eliminated.

May 6^{d} 10^{h}—13^{h}. An excessive magnetic disturbance, during which the torsion circle of the Bifilar Magnetometer was turned from 287° 44′ to 291° 45′; it was left reading 287° 41′.

May 9^{d}. The Bifilar magnet has been moving irregularly throughout the day; the reading has often been as high as 512 Sc. Div.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
May 10	18	0	25	22·96	488·2	46·9	668·3	47·2
	20	0		24·50	486·0	46·6	666·5	46·9
	22	0		25·27	484·4	47·3	670·7	47·6
May 11	0	0		22·80	486·9	49·9	659·2	49·0
	2	0		27·36	503·1	53·9	664·1	52·4
	4	0		25·46	504·0	57·6	675·4	55·5
	6	0		23·76	509·5	59·7	679·8	57·4
	8	0		26·79	512·3	59·8	675·0	58·0
	10	0		20·74	499·9	58·1	675·3	56·8
	18	0	25	20·00	490·4	49·3	675·1	49·9
	20	0		17·27	489·2	49·2	683·8	49·5
	22	0		23·21	481·1	50·7	676·4	50·5
May 12	0	0		28·00	482·6	52·8	670·1	52·0
	2	0		29·95	504·1	54·6	671·3	53·6
	4	0		27·88	501·6	55·5	679·5	54·5
	6	0		26·50	507·1	55·7	686·2	54·9
	8	0		26·55	505·6	55·2	682·6	54·5
	10	0		25·65	502·6	54·7	682·7	54·2
	18	0	25	21·15	503·2	52·9	649·5	52·7
	20	0		20·77	494·0	53·0	662·0	52·9
	22	0		22·33	490·2	53·8	672·2	53·2
May 13	0	0		26·35	488·2	55·3	672·4	54·7
	2	0		27·13	493·4	56·3	665·3	55·6
	4	0		26·50	496·4	57·2	673·2	56·4
	6	0		24·82	504·9	56·9	683·1	56·3
	8	0		24·25	505·5	56·0	694·3	55·6
	10	0		24·53	501·0	55·0	682·4	55·0
May 14	18	0	25	22·05	501·4	52·0	666·9	52·1
	20	0		19·70	497·9	51·8	667·9	51·8
	22	0		20·57	487·8	52·0	668·2	52·0
May 15	0	0		26·69	486·7	52·6	642·4	52·4
	2	0		32·97	501·4	52·6	639·2	52·4
	4	0		31·90	523·1	52·3	644·5	52·0
	6	0		28·67	519·1	52·0	665·9	51·6
	8	0		23·91	523·9	51·2	701·2	51·0
	10	0		22·58	497·2	50·7	737·2	50·9
	18	0	25	26·99	506·2	48·3	646·0	48·5
	20	0		22·52	488·5	48·2	651·9	48·2
	22	0		25·72	480·3	48·3	667·3	48·3
May 16	0	0		28·15	479·2	48·8	667·4	48·8
	2	0		31·30	493·8	49·0	663·9	48·9
	4	0		24·96	499·7	49·0	710·9	48·8
	6	0		26·42	512·0	48·8	705·3	48·6
	8	0		25·07	508·2	48·6	693·0	48·4
	10	0		22·45	513·0	48·0	684·0	48·0
	18	0	25	21·26	491·9	46·0	667·7	46·2
	20	0		20·57	493·8	46·8	678·7	46·8
	22	0		21·73	490·0	47·3	675·4	47·1
May 17	0	0		25·78	487·5	48·4	659·4	48·0
	2	0		27·80	500·0	49·9	655·5	49·0
	4	0		22·79	509·1	50·8	689·2	49·8
	6	0		24·55	516·6	50·8	684·4	49·8
	8	0		24·57	513·1	49·7	678·7	49·2
	10	0		23·54	500·3	48·4	673·5	48·3
May 17	18	0	25	21·71	493·9	45·0	655·5	45·5
	20	0		20·16	493·3	44·8	661·7	45·2
	22	0		21·62	485·6	45·8	652·5	46·0
May 18	0	0		26·48	494·8	47·4	641·6	47·0
	2	0		30·03	498·9	48·8	654·6	48·0
	4	0		26·94	503·8	49·9	660·2	49·0
	6	0		24·74	512·6	50·1	677·3	49·3
	8	0		22·67	513·4	50·4	686·1	49·5
	10	0		24·13	507·4	49·6	671·9	48·9
	18	0	25	22·08	497·2	42·7	672·5	43·5
	20	0		20·43	497·3	43·0	685·7	43·9
	22	0		21·96	490·0	44·8	671·5	45·0
May 19	0	0		26·89	491·0	47·6	649·9	46·9
	2	0		29·75	498·9	49·8	656·5	48·6
	4	0		26·19	506·4	51·6	668·7	50·0
	6	0		24·72	510·1	52·0	673·8	50·6
	8	0		22·36	510·5	52·0	670·7	50·6
	10	0		23·32	506·7	50·3	663·9	49·5
	18	0	25	20·00	498·9	46·0	674·3	46·4
	20	0		17·07	496·9	46·8	684·9	46·9
	22	0		21·21	486·8	47·3	678·6	47·2
May 20	0	0		27·22	486·1	49·0	653·2	48·5
	2	0		28·17	494·6	51·8	655·8	50·4
	4	0		25·98	504·7	54·5	667·0	52·5
	6	0		24·18	514·5	55·6	674·5	53·7
	8	0		22·45	508·1	54·9	671·7	53·5
	10	0		23·29	507·1	52·8	664·4	52·0
May 21	18	0	25	20·57	500·1	46·8	671·3	46·8
	20	0		19·63	495·2	46·7	673·4	46·7
	22	0		21·37	494·9	46·8	649·3	46·8
May 22	0	0		24·92	497·7	47·0	639·6	47·0
	2	0		26·59	507·5	47·8	645·3	47·5
	4	0		26·94	510·0	48·1	655·0	47·8
	6	0		25·25	512·8	48·3	666·8	48·0
	8	0		24·85	517·2	48·2	664·1	48·0
	10	0		24·47	512·5	47·7	662·6	47·6
	18	0	25	17·62	500·9	46·9	654·5	47·0
	20	0		19·07	491·5	46·9	657·2	47·0
	22	0		20·63	489·0	47·6	645·9	47·4
May 23	0	0		25·34	492·9	48·1	634·9	47·8
	2	0		26·97	504·1	48·9	645·4	48·4
	4	0		25·07	508·6	49·0	661·3	48·5
	6	0		22·35	512·9	49·0	675·6	48·6
	8	0		22·92	511·9	48·9	667·0	48·6
	10	0		23·93	511·5	48·8	662·7	48·5
	18	0	25	18·41	504·0	48·0	658·9	48·0
	20	0		18·45	496·5	48·0	660·2	48·0
	22	0		22·53	484·8	48·3	655·9	48·2
May 24	0	0		29·91	486·8	48·8	639·1	48·5
	2	0		31·46	496·9	49·0	638·9	48·8
	4	0		27·38	504·8	49·9	665·6	49·5
	6	10		22·58	514·0	50·1	671·6	49·5
	8	0		22·67	515·0	49·8	669·1	49·3
	10	0		23·07	512·1	48·9	661·1	48·6

DECLINATION. Torsion removed, circle reading,—May 12^{d} 23^{h}, 173°; 15^{d} 23^{h}, 198°; 19^{d} 3^{h}, 203°.
BIFILAR. k=0·0001205. BALANCE. k=0·000015 approximately.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
d.	h.	m.	°	′	Corrected. Sc. Div.	Thermometer. °	Corrected. Mic. Div.	Thermometer. °
May 24	18	0	25	18·97	503·9	47·3	667·9	47·5
	20	0		18·52	497·3	47·6	677·6	47·5
	22	0		21·71	490·8	48·3	661·1	48·0
May 25	0	0		29·33	488·8	49·8	625·1	49·2
	2	0		33·54	499·8	50·8	622·4	50·0
	4	0		29·89	507·6	51·1	649·7	50·4
	6	0		24·60	511·4	51·1	676·8	50·5
	8	0		23·79	510·8	51·3	670·9	50·7
	10	0		24·17	511·5	51·0	664·7	50·5
	18	0	25	19·80	504·7	49·1	665·2	48·9
	20	0		19·39	500·8	50·3	663·3	49·8
	22	0		20·54	491·3	52·0	652·0	51·1
May 26	0	0		29·36	496·0	54·2	632·8	53·0
	2	0		33·94	503·4	56·3	619·5	55·2
	4	0		28·54	513·5	57·7	635·4	56·5
	6	0		25·95	517·7	58·4	655·2	57·1
	8	0		22·45	515·0	57·3	676·6	56·5
	10	0		17·61	473·2	55·9	578·3	55·5
	18	0	25	17·04	504·3	54·4	649·9	54·4
	20	0		16·41	490·8	53·8	661·1	54·0
	22	0		20·67	478·5	53·8	656·5	54·0
May 27	0	0		27·76	489·1	54·9	641·3	54·9
	2	0		29·98	504·5	55·3	644·8	55·4
	4	0		27·43	514·8	55·7	663·4	55·5
	6	0		23·91	514·5	56·6	670·2	56·2
	8	0		22·65	514·1	56·3	671·8	56·0
	10	0		21·96	508·8	55·7	671·4	55·8
May 28	18	0	25	19·22	503·1	45·8	663·5	46·4
	20	0		18·21	495·5	46·1	678·9	46·5
	22	0		19·47	489·5	46·9	659·2	47·0
May 29	0	0		26·62	495·4	49·6	632·6	49·0
	2	0		30·99	525·2	52·7	619·0	51·5
	4	0		33·38	516·9	54·0	642·1	52·7
	6	0		27·96	522·6	53·9	660·6	53·0
	8	0		24·24	523·9	53·7	677·2	52·9
	10	0		24·72	510·2	52·7	667·2	52·1
	18	0	25	28·67	509·6	46·8	615·9	47·2
	20	0		24·53	493·3	46·8	646·0	47·2
	22	0		21·35	487·7	48·0	651·1	48·0
May 30	0	0		27·02	492·3	50·0	642·1	49·5
	2	0		30·51	501·8	53·7	643·1	52·4
	4	0		29·31	509·6	55·8	653·9	54·2
	6	0		25·52	512·3	55·0	674·0	54·0
	8	0		24·47	513·3	54·0	674·9	53·3
	10	0		24·67	507·8	52·7	667·3	52·5
	18	0	25	21·14	499·7	48·8	662·8	49·0
	20	0		20·63	496·5	48·2	669·3	48·5
	22	0		22·36	486·1	48·0	654·8	48·4
May 31	0	0		26·79	491·3	48·4	632·7	48·5
	2	0		30·90	506·3	48·9	649·4	49·8
	4	0		28·94	509·7	49·6	658·0	49·2
	6	0		25·46	512·3	49·9	670·4	49·5
	8	0		24·06	513·1	50·0	668·2	49·6
	10	0		23·93	510·5	49·7	666·4	49·4
May 31	18	0	25	22·72	504·1	47·8	672·7	47·8
	20	0		19·09	496·9	47·8	671·2	47·8
	22	0		21·24	481·4	48·2	666·5	48·0
June 1	0	0		28·21	488·9	49·0	640·3	48·8
	2	0		34·50	500·5	49·7	645·9	49·2
	4	0		31·04	511·3	50·0	656·4	49·4
	6	0		25·66	513·1	50·2	670·4	49·6
	8	0		24·06	514·1	50·2	662·7	49·7
	10	0		25·18	511·9	50·0	665·1	49·6
	18	0	25	21·24	508·1	49·0	671·6	49·0
	20	0		19·06	503·8	49·8	670·6	49·5
	22	0		22·45	490·0	51·7	657·1	50·9
June 2	0	0		30·39	493·7	53·7	625·6	52·5
	2	0		33·94	504·5	56·0	633·0	54·8
	4	0		32·57	505·2	56·3	652·6	55·2
	6	0		26·97	511·5	55·1	679·3	54·5
	8	0		25·39	521·2	53·9	663·7	53·5
	10	0		25·88	518·4	52·8	651·3	52·5
	18	0	25	19·36	502·2	49·7	646·4	49·7
	20	0		15·79	493·8	49·4	653·1	49·4
	22	0		34·85	491·8	49·4	629·3	49·4
June 3	0	0		30·46	495·7	49·9	638·4	49·7
	2	0		33·42	498·5	50·6	641·2	50·0
	4	0		31·50	500·5	50·3	679·7	50·0
	6	0		28·41	508·5	49·8	680·0	49·5
	8	0		25·63	512·8	49·0	695·6	48·9
	10	0		24·20	504·5	48·1	673·5	48·0
June 4	18	0	25	21·56	501·7	46·3	623·6	46·5
	20	0		23·16	492·6	46·1	655·0	46·4
	22	0		26·42	488·6	46·0	656·1	46·2
June 5	0	0		29·31	487·6	46·0	643·3	46·1
	2	0		27·96	497·2	46·1	649·2	46·1
	4	0		27·58	516·6	46·1	657·7	46·2
	6	0		24·67	505·8	46·0	675·7	46·0
	8	0		26·01	512·4	45·6	671·5	45·6
	10	0		25·68	505·4	45·1	672·2	45·1
	18	0	25	20·41	497·7	44·2	645·8	44·5
	20	0		21·95	496·1	44·9	665·4	45·0
	22	0		23·36	493·5	46·4	649·4	46·0
June 6	0	0		27·40	492·0	47·8	643·5	47·1
	2	0		29·21	502·0	49·1	636·1	48·3
	4	0		26·97	506·9	50·9	657·7	49·7
	6	0		25·98	508·9	51·6	662·8	50·4
	8	0		25·22	515·2	51·9	660·5	50·9
	10	0		24·60	509·9	51·7	664·7	50·8
	18	0	25	21·42	502·9	49·4	642·7	49·4
	20	0		20·30	499·2	50·2	659·4	49·9
	22	0		22·27	490·9	52·0	657·2	51·1
June 7	0	0		27·76	498·6	53·2	650·3	52·4
	2	0		27·61	511·8	55·4	650·4	54·4
	4	0		29·11	507·7	57·1	657·5	55·9
	6	0		25·01	514·0	57·1	683·7	56·1
	8	0		25·51	518·5	57·0	686·9	56·2
	10	0		32·35	510·1	56·2	642·8	55·8

DECLINATION. Torsion removed, circle reading,—May 26^{d} 3^{h}, 229°;* 29^{d} 3^{h}, 246°; June 7^{d} 1^{h}, 253°.
BIFILAR. k=0·0001205. BALANCE. k=0·000015 approximately.

---

* May 26^{d} 3^{h}. Two fibres of the suspension thread of the Declinometer found broken.

Göttingen Mean Time of Declination Observation.			Declination.		Bifilar. Corrected.	Bifilar. Thermometer.	Balance. Corrected.	Balance. Thermometer.	Göttingen Mean Time of Declination Observation.			Declination.		Bifilar. Corrected.	Bifilar. Thermometer.	Balance. Corrected.	Balance. Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°	d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
June 7	18	0	25	21·95	484·6	53·7	633·7	53·7	June 14	18	0	25	28·37	494·9	56·3	670·0	56·3
	20	0		25·92	489·1	54·5	642·6	54·3		20	0		23·21	496·3	57·0	677·0	56·6
	22	0		24·60	484·8	55·2	672·8	54·9		22	0		24·72	484·1	57·9	681·2	57·5
June 8	0	0		26·75	494·5	56·0	661·9	55·5	June 15	0	0		31·36	486·2	60·3	664·6	59·5
	2	0		29·68	496·3	56·9	642·0	56·2		2	0		32·60	501·5	63·4	657·9	62·0
	4	0		26·87	504·4	57·8	660·0	57·0		4	0		30·51	505·2	65·7	659·8	64·0
	6	0		25·85	509·8	58·0	668·3	57·3		6	0		27·93	515·2	67·1	672·4	65·1
	8	0		23·19	512·8	57·5	660·5	57·0		8	0		28·64	511·7	67·6	672·1	65·6
	10	0		23·29	504·2	56·2	673·0	56·0		10	0		27·96	507·9	66·1	678·6	65·0
	18	0	25	21·29	496·1	53·1	668·2	53·1		18	0	25	26·13	496·8	57·6	681·7	57·6
	20	0		19·63	492·7	53·4	674·3	53·4		20	0		24·98	488·2	57·3	699·3	57·5
	22	0		22·58	487·7	54·8	670·2	54·4		22	0		24·62	483·8	58·7	677·6	58·5
June 9	0	0		26·35	486·5	55·6	665·6	55·0	June 16	0	0		33·87	488·1	61·7	658·3	60·8
	2	0		28·67	498·8	56·2	659·6	55·5		2	0		……	498·9	64·9	628·0	63·5
	4	0		26·19	508·3	56·8	666·0	56·1		4	0		29·78	502·9	67·3	656·5	65·5
	6	0		24·75	508·8	57·2	672·6	56·5		6	0		27·44	512·5	68·7	672·5	66·6
	8	0		24·74	509·2	56·7	672·3	56·0		8	0		26·62	512·7	68·3	677·0	66·5
	10	0		23·34	507·7	55·7	675·1	55·5		10	0		27·29	510·3	66·9	681·5	66·9
	18	0	25	17·07	506·1	53·2	666·6	53·2		18	0	25	23·79	502·0	57·7	686·0	58·0
	20	0		19·54	518·7	53·4	655·8	53·4		20	0		24·47	495·5	57·1	690·0	57·4
	22	0		24·06	497·2	54·3	657·5	54·0		22	0		25·81	485·2	57·9	687·8	57·8
June 10	0	0		30·79	491·4	56·0	654·0	55·5	June 17	0	0		32·00	488·6	59·3	669·9	58·6
	2	0		33·27	505·9	58·1	656·3	57·1		2	0		33·22	497·8	61·0	666·6	60·1
	4	0		29·04	511·3	59·7	665·7	58·5		4	0		30·66	505·3	63·2	685·0	61·8
	6	0		25·83	512·3	60·8	681·5	59·5		6	0		27·98	511·6	65·3	679·5	63·4
	8	0		26·17	522·0	61·0	682·2	60·0		8	0		27·93	517·8	66·7	674·6	64·5
	10	0		25·27	514·8	59·3	669·3	58·9		10	0		27·36	507·1	65·0	667·3	63·6
June 11	18	0	25	23·09	501·9	52·7	642·9	52·6	June 18	18	0	25	23·24	500·2	54·0	682·8	54·0
	20	0		23·26	496·9	52·7	655·9	52·5		20	0		21·91	498·3	53·4	683·8	53·4
	22	0		25·19	477·4	52·7	663·7	52·5		22	0		23·86	486·4	53·3	683·8	53·1
June 12	0	0		27·83	492·2	53·5	663·8	53·0	June 19	0	0		24·71	491·9	53·9	666·5	53·6
	2	0		31·19	500·3	54·6	684·9	54·0		2	0		26·22	503·8	54·8	654·4	54·4
	4	0		30·55	505·0	55·6	695·3	54·9		4	8		25·21	506·5	56·0	670·0	55·4
	6	0		25·27	516·1	55·4	708·3	54·8		6	0		21·84	515·0	55·9	674·5	55·3
	8	0		25·88	519·7	54·6	700·3	54·1		8	0		19·22	521·7	55·4	678·1	55·0
	10	0		22·55	508·9	53·4	698·9	53·0		10	0		21·22	514·9	54·8	678·6	54·5
	18	0	25	23·24	490·2	49·9	657·5	49·8		18	0	25	17·09	503·4	51·6	664·4	51·5
	20	0		18·55	485·4	49·8	674·2	49·5		20	0		16·80	497·7	52·0	676·9	51·9
	22	0		22·67	480·3	50·0	684·2	49·8		22	0		17·25	493·8	53·3	674·5	52·7
June 13	0	0		26·62	486·3	51·0	674·8	50·5	June 20	0	0		23·93	497·5	55·9	664·8	54·9
	2	0		32·27	509·9	53·0	663·6	52·3		2	0		28·50	499·0	59·8	636·3	58·0
	4	0		29·31	511·2	54·3	698·2	53·2		4	0		27·22	507·9	63·3	642·9	61·1
	6	0		24·60	492·5	54·8	731·0	54·0		6	0		22·72	521·8	66·3	656·9	63·9
	8	0		26·62	510·4	54·5	695·9	53·8		8	0		21·24	523·7	67·1	662·3	65·1
	10	0		23·57	516·9	53·5	654·2	53·0		10	0		19·33	520·1	65·5	666·2	64·0
	18	0	25	26·15	499·3	50·7	685·3	50·5		18	0	25	17·74	498·9	58·2	665·8	58·5
	20	0		25·11	498·6	51·9	682·3	51·5		20	0		17·14	494·4	58·1	675·4	58·3
	22	0		24·77	492·9	53·4	673·6	52·8		22	0		20·03	489·5	58·5	670·8	58·4
June 14	0	0		30·55	495·4	56·1	658·7	55·1	June 21	0	0		24·13	492·4	59·8	652·1	59·4
	2	0		34·08	503·4	59·2	653·9	57·9		2	0		28·59	504·5	61·3	651·8	60·5
	4	0		32·25	502·7	61·8	668·0	59·8		4	0		26·03	508·1	64·1	658·5	63·0
	6	0		29·51	511·0	63·1	689·2	61·0		6	0		23·04	512·3	66·0	665·7	64·5
	8	0		28·70	512·0	64·0	675·2	62·2		8	0		21·75	516·2	66·7	665·5	65·3
	10	0		27·63	505·9	62·6	671·5	61·5		10	0		20·57	512·8	65·7	668·0	64·8

DECLINATION. Torsion removed, circle reading,—June 8^{d} 2^{h}, 267°, 278° ;* 16^{d} 2^{h}, 118° ;† 16^{d} 3^{h}, 48°; 18^{d} 23^{d}, 77°; 21^{d} 9^{h}, 87°.
BIFILAR. k=0·0001205, BALANCE. k=0·000015 approximately.

---

* June 8^{d} 2^{h}. When two readings of the torsion circle are given at the same date, the last is the result of a second trial.

† June 16^{d} 2^{h}. Three fibres of the suspension thread of the Declinometer found broken; torsion eliminated as above; the three fibres were then withdrawn, and the torsion again removed before 4^{h}.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
June 21	18	0		......	497·2	59·9	663·7	60·2
	20	0		......	496·3	59·7	665·7	60·1
	22	0		......	500·5	61·1	660·0	61·0
June 22	0	0		......	499·0	63·2	639·0	62·6
	2	0		......	504·3	65·8	645·6	65·3 ?
	4	0		......	503·7	68·0	643·7	66·9
	6	0		......	514·5	69·9	651·2	68·4
	8	0		......	515·3	71·0	657·4	69·3
	10	0		......	510·3	69·7	657·3	68·4
	18	0		......	500·0	59·6	655·7	59·6
	20	0		......	492·8	59·0	675·3	59·4
	22	0		......	486·2	59·4	681·5	59·5
June 23	0	0	25	24·20	487·4	62·0	674·3	61·5
	2	0		28·57	494·9	66·5	652·3	65·0
	4	0		30·58	504·5	69·9	642·2	68·0
	6	0		29·21	513·8	70·0	648·4	68·2
	8	0		27·83	516·3	69·3	660·5	68·0
	10	0		27·49	510·8	67·0	663·3	66·3
	18	0	25	23·66	501·0	59·0	662·5	59·0
	20	0		21·24	496·2	59·0	674·9	59·0
	22	0		22·56	490·4	60·3	678·4	60·0
June 24	0	0		32·30	496·0	63·0	666·4	62·1
	2	0		35·22	501·9	64·9	666·8	63·7
	4	0		31·79	512·3	66·9	646·2	65·3
	6	0		29·22	513·5	68·3	658·9	66·3
	8	0		27·94	513·4	68·8	668·8	66·8
	10	0		27·14	509·9	67·0	676·8	66·0
June 25	18	0	25	21·41	504·4	55·0	661·4	55·0
	20	0		18·46	495·4	54·9	673·0	54·9
	22	0		21·31	483·4	55·1	673·1	55·0
June 26	0	0		31·46	484·4	56·6	647·3	56·0
	2	0		34·95	504·5	58·9	643·5	57·7
	4	0		33·20	515·7	61·7	675·2	60·0
	6	0		26·62	513·8	63·2	687·4	61·5
	8	0		25·75	517·9	63·0	677·7	61·5
	10	0		25·48	512·0	61·1	669·9	60·3
	18	0	25	20·57	501·9	54·5	672·2	54·9
	20	0		19·76	492·3	54·4	676·3	54·6
	22	0		23·12	484·1	54·6	664·0	54·6
June 27	0	0		31·74	486·0	55·1	648·0	55·0
	2	0		33·55	499·9	56·2	655·6	55·7
	4	0		30·45	510·5	57·8	674·3	57·0
	6	0		25·95	510·1	58·2	677·9	57·2
	8	0		25·31	517·7	57·1	675·5	56·5
	10	0		25·27	513·0	55·7	670·0	55·5
	18	0	25	21·91	504·1	51·0	668·4	51·0
	20	0		19·60	497·0	51·2	683·6	51·0
	22	0		23·19	483·9	52·2	674·5	51·9
June 28	0	0		30·96	487·6	53·2	657·1	52·7
	2	0		32·72	501·1	54·8	658·2	54·0
	4	0		31·19	512·0	55·7	671·3	54·8
	6	0		26·48	511·5	56·0	681·1	55·4
	8	0		25·75	512·9	55·7	670·9	55·0
	10	0		25.54	509·5	54·4	664·9	54·0
June 28	18	0	25	21·24	507·1	50·8	673·9	50·7
	20	0		20·43	489·0	50·9	685·9	50·9
	22	0		24·06	490·1	51·9	677·7	51·6
June 29	0	0		26·53	497·4	53·7	667·7	53·0
	2	0		28·67	508·4	55·4	659·8	54·6
	4	0		25·04	516·4	57·0	674·9	56·0
	6	0		21·58	513·5	57·1	675·7	56·2
	8	0		19·91	519·4	58·4	671·8	57·7
	10	0		20·79	520·2	58·9	662·8	58·0
	18	0	25	15·86	505·3	54·3	652·5	54·5
	20	0		14·06	495·0	54·3	659·1	54·5
	22	0		16·48	490·1	55·3	661·9	55·0
June 30	0	0		33·05	491·7	56·9	650·2	56·4
	2	0		39·66	505·2	59·0	643·6	58·0
	4	0		33·25	522·5	60·4	663·6	59·5
	6	0		31·12	525·5	61·2	704·4	60·1
	8	0		......	515·7	62·0	712·3	61·0
	10	0		26·08	507·6	61·3	687·7	60·5
	18	0	25	25·14	488·8	56·3	582·2	56·4
	20	0		16·40	484·5	57·3	636·9	57·0
	22	0		20·92	481·4	58·4	647·6	58·0
July 1	0	0		30·07	483·0	59·6	645·6	59·0
	2	0		33·76	491·3	61·6	648·4	60·5
	4	0		30·29	508·7	62·2	659·4	61·3
	6	0		28·64	517·8	62·2	666·5	61·5
	8	0		25·48	520·5	61·9	681·4	61·3
	10	0		25·90	506·6	60·9	669·6	60·5
July 2	18	0	25	24·33	505·7	60·6	633·9	60·5
	20	0		19·58	500·1	60·8	647·7	60·6
	22	0		22·11	484·1	61·3	650·5	61·0
July 3	0	0		30·79	479·7	62·4	640·8	62·0
	2	0		34·61	492·6	64·1	639·7	63·4
	4	0		32·89	515·3	65·7	656·0	64·6
	6	0		28·88	518·0	66·4	670·9	65·4
	8	0		26·89	517·7	67·0	679·0	66·0
	10	0		19·89	513·0	65·8	660·5	65·0
	18	0	25	24·60	492·3	59·2	661·1	59·3
	20	0		22·22	494·7	59·2	680·0	59·4
	22	0		23·59	483·6	59·8	676·8	59·8
July 4	0	0		28·88	481·0	61·9	668·8	61·3
	2	0		31·19	495·0	64·3	668·9	63·4
	4	0		30·15	510·7	66·6	659·4	65·4
	6	0		28·44	511·8	68·3	662·8	66·6
	8	0		26·15	521·1	69·0	668·0	67·4
	10	0		25·86	512·5	67·6	667·4	67·8
	18	0	25	26·84	495·6	61·8	640·2	62·0
	20	0		22·05	498·1	61·4	644·8	61·5
	22	0		24·31	489·3	62·1	666·4	62·1
July 5	0	0		28·08	487·1	63·6	666·7	63·2
	2	0		29·89	498·9	66·1	662·5	65·3
	4	0		29·17	504·5	68·1	653·2	67·0
	6	0		29·44	508·1	67·9	651·8	66·9
	8	0		26·10	512·6	67·2	655·9	66·5
	10	0		25·12	507·6	65·6	660·8	65·3

DECLINATION. Torsion removed, circle reading,—June 22^{d} 23^{h}, 342°;* 23^{d} 19^{h}, 326°; 25^{d} 19^{h}, 6°, 11°; 28^{d} 23^{h}, 16°, 32°; 29^{d} 23^{h}, 318°,† 271°;† 30^{d} 3^{h}, 326°;† 30^{d} 7^{h}, 334°, 325°;† July 5^{d} 7^{h}, 15°.

BIFILAR. $k=0·0001205$. **BALANCE.** $k=0·000015$ approximately.

---

* June 22^{d}—23^{d}. Suspension thread of Declinometer broken and a new thread substituted. See *Introduction.*

† June 29^{d}—30^{d}. Experiments made on the torsion of the suspension thread. See *Introduction.*

Göttingen Mean Time of Declination Observation.	Declination.	Bifilar. Corrected.	Bifilar. Thermometer.	Balance. Corrected.	Balance. Thermometer.	Göttingen Mean Time of Declination Observation.	Declination.	Bifilar. Corrected.	Bifilar. Thermometer.	Balance. Corrected.	Balance. Thermometer.
d. h. m.	° ′	Sc. Div.	°	Mic. Div.	°	d. h. m.	° ′	Sc. Div.	°	Mic. Div.	°
July 5 18 0	25 22·83	499·6	62·0	662·3	62·0	July 12 18 0	25 18·84	498·1	59·0	659·0	59·0
20 0	22·62	495·7	61·7	660·8	61·8	20 0	19·22	492·4	59·3	658·1	59·3
22 0	19·86	491·6	62·2	669·5	62·2	22 0	21·81	486·5	60·8	657·5	60·5
July 6 0 0	23·90	487·1	63·3	642·3	63·0	July 13 0 0	28·48	487·9	62·7	663·3	62·0
2 0	27·49	494·9	65·3	639·1	64·5	2 0	31·19	504·6	65·0	612·1	64·0
4 0	26·06	503·7	67·2	644·8	66·2	4 0	26·69	516·6	67·7	638·4	66·0
6 0	24·60	505·1	67·6	652·6	66·7	6 0	23·93	520·0	68·8	654·3	67·1
8 0	24·53	509·3	67·0	658·1	66·5	8 0	25·95	513·3	69·6	662·4	67·8
10 0	24·06	509·8	65·8	656·3	65·5	10 0	22·16	507·7	68·0	656·6	67·0
18 0	25 20·81	496·9	58·7	663·0	58·9	18 15	25 17·31	495·8	60·5	605·1	60·5
20 0	20·13	492·6	58·1	675·1	58·5	20 0	17·79	493·3	60·2	634·5	60·4
22 0	21·24	488·2	59·4	679·2	59·4	22 0	18·72	484·9	61·1	655·4	61·0
July 7 0 0	24·01	489·3	61·6	662·9	61·0	July 14 0 0	26·32	492·9	64·0	654·3	63·4
2 0	26·40	505·5	64·0	648·9	63·0	2 0	25·31	510·2	66·2	650·4	65·2
4 0	27·26	513·4	66·6	662·2	65·2	4 15	26·86	507·1	67·8	653·2	66·6
6 0	26·28	517·0	67·0	671·1	65·8	6 0	25·27	514·4	68·6	647·8	67·5
8 0	25·83	517·5	66·5	682·2	65·5	8 0	23·03	512·0	68·9	663·2	67·6
10 0	19·09	510·2	65·2	660·4	64·8	10 0	19·53	506·6	67·6	659·4	66·7
18 0	25 27·85	501·7	59·5	622·5	59·7	18 0	25 18·86	502·7	62·4	653·0	62·3
20 0	27·49	500·0	59·9	629·5	60·0	20 0	21·84	499·3	62·3	656·4	62·3
22 0	24·04	473·0	61·2	654·1	60·9	22 0	21·24	493·0	63·8	657·2	63·4
July 8 0 0	27·91	484·3	63·4	658·5	62·7	July 15 0 0	25·81	497·6	65·9	645·5	65·0
2 0	34·95	488·4	65·3	668·2	64·4	2 0	30·56	500·9	67·6	645·7	66·5
4 0	31·35	514·8	64·9	672·8	64·0	4 0	26·42	512·1	69·6	635·5	68·0
6 0	25·88	511·0	64·9	727·5	64·1	6 0	24·58	516·5	71·0	634·3	68·4
8 0	23·90	513·9	64·7	690·6	64·0	8 0	23·79	512·8	71·0	654·6	69·5
10 0	23·39	502·1	63·6	658·9	63·4	10 0	22·65	507·7	68·1	642·9	67·5
July 9 18 0	25 20·81	504·7	60·9	636·6	61·0	July 16 18 0	25 19·44	499·9	58·2	651·1	58·5
20 0	26·62	492·7	61·0	639·9	61·0	20 0	19·12	499·8	57·7	644·8	58·0
22 0	25·43	483·4	62·0	654·3	62·0	22 0	23·23	496·7	57·9	637·7	58·0
July 10 0 0	28·10	498·9	64·4	653·8	63·6	July 17 0 0	25·29	493·3	59·7	640·6	59·2
2 0	35·13	486·7	66·2	673·2	65·3	2 0	28·94	490·0	61·6	648·1	60·7
4 0	27·16	506·2	67·7	678·6	66·1	4 0	29·38	505·3	62·2	646·0	61·5
6 0	24·40	528·2	68·6	695·1	67·0	6 12	24·47	516·3	62·7	657·4	62·0
8 0	23·68	510·0	67·7	694·3	66·6	8 0	22·02	512·6	62·6	668·9	62·0
10 0	25·16	507·2	65·9	662·2	65·4	10 0	22·63	506·4	62·2	662·0	62·0
18 0	25 18·99	494·8	60·8	657·4	60·9	18 0	25 17·24	500·7	60·7	649·3	60·5
20 0	20·40	487·6	61·2	664·8	61·1	20 0	16·53	497·9	60·7	653·2	60·5
22 0	25·21	484·1	62·0	652·0	62·0	22 0	17·61	490·1	60.7	654·6	60·5
July 11 0 0	29·24	492·9	63·6	653·4	63·0	July 18 0 0	24·13	484·5	60·4	634·0	60·3
2 0	27·17	507·8	65·7	667·6	64·8	2 0	27·40	500·5	61·7	636·7	61·2
4 0	26·57	512·6	67·9	656·7	66·5	4 0	25·79	509·6	63·3	641·1	62·6
6 0	25·93	512·1	69·0	655·4	67·3	6 0	23·59	513·0	65·0	649·4	64·0
8 0	24·60	511·9	69·9	662·7	68·0	8 0	23·93	511·4	65·9	659·5	64·8
10 0	24·40	510·1	68·4	663·6	67·0	10 0	23·19	508·1	65·0	651·6	64·0
18 0	25 21·37	496·9	59·3	661·4	59·6	18 0	25 21·04	502·8	58·2	644·7	58·4
20 0	21·84	490·0	59·1	664·4	59·4	20 0	19·33	502·2	58·4	647·7	58·5
22 0	22·06	481·3	60·4	673·1	60·3	22 0	20·94	499·0	58·3	630·4	58·5
July 12 0 0	27·80	485·0	62·0	665·4	61·5	July 19 0 0	25·16	489·7	58·7	628·7	58·6
2 0	29·29	500·7	63·6	660·7	62·8	2 0	29·24	495·2	60·2	629·5	59·8
4 0	25·27	507·8	64·2	663·7	63·5	4 0	29·12	507·3	61·8	639·3	61·0
6 0	23·26	510·3	63·3	664·8	63·0	6 0	24·53	513·5	62·3	650·4	61·5
8 0	21·84	515·5	62·0	675·0	62·0	8 0	22·82	515·7	61·8	649·6	61·0
10 0	23·26	507·6	61·4	663·6	61·5	10 0	20·88	506·9	60·4	654·6	60·2

DECLINATION. Torsion removed, circle reading,—July 5ᵈ 21ʰ, 28°; 11ᵈ 3ʰ, 46°, 51°; 13ᵈ 23ʰ, 59°; 18ᵈ 19ʰ, 44°; 19ᵈ 7ʰ, 67°.
BIFILAR. k=0·0001205. BALANCE. k=0·000015 approximately.

Göttingen Mean Time of Declination Observation.			Declination.		Bifilar.		Balance.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
July 19	18	0	25	18·48	500·9	58·2	647·1	58·8
	20	0		17·88	495·7	57·4	651·3	58·0
	22	0		20·72	490·7	57·4	652·0	57·8
July 20	0	0		25·27	488·8	57·3	642·5	57·5
	2	0		27·46	497·0	57·3	640·8	57·5
	4	0		23·76	507·5	57·7	649·5	57·8
	6	0		21·96	509·7	58·0	658·3	58·0
	8	0		22·43	510·3	58·2	655·4	58·2
	10	0		22·05	509·4	57·9	651·8	58·0
	18	0	25	19·31	506·0	55·3	641·7	55·5
	20	0		19·89	505·7	55·7	641·6	55·7
	22	0		20·43	496·4	56·9	628·9	56·5
July 21	0	0		25·52	492·3	58·1	618·0	57·5
	2	0		29·31	500·4	59·3	617·2	58·6
	4	0		28·17	511·2	61·2	631·1	60·3
	6	0		23·93	513·9	62·7	637·3	61·5
	8	0		23·86	515·5	63·3	649·7	62·0
	10	0		23·17	509·2	62·0	647·5	61·0
	18	0	25	17·41	503·7	55·1	632·5	55·5
	20	0		17·58	497·0	55·1	644·0	55·5
	22	0		20·48	494·8	56·7	640·2	56·4
July 22	0	0		26·67	497·4	58·8	631·2	58·0
	2	0		29·02	497·9	61·0	632·3	59·8
	4	0		28·05	506·5	61·6	654·4	60·7
	6	0		24·64	510·3	61·7	665·1	61·5
	8	0		23·19	512·3	61·8	658·6	61·2
	10	0		22·92	509·9	61·0	661·2	60·7
July 23	18	0	25	20·61	503·4	54·0	639·1	53·6
	20	0	25	19·15	499·7	54·2	654·4	53·9
	22	0	25	21·64	495·9	55·0	649·2	54·7
July 24	0	0	25	26·52	499·2	56·3	629·3	56·0
	2	0	25	27·96	511·7	57·9	633·2	57·0
	4	0	25	25·79	513·5	60·0	637·1	59·0
	6	0	25	25·32	567·3	61·3	621·0	60·2
	8	0	25	22·99	524·7	62·1	685·1	61·0
	10	0	24	55·11	507·9	61·3	593·6	60·5
	18	0	25	17·88	503·1	54·8	654·6	54·7
	20	0		17·67	496·7	54·2	654·9	54·6
	22	0		31·03	444·1	56·3	674·9	56·0
July 25	0	0		33·15	467·2	60·0	702·6	59·6
	2	0		35·59	517·5	63·2	814·0	63·2
	4	0		28·12	609·2	65·0	905·5	63·7
	6	0		31·96	519·4	66·0	812·8	64·9
	8	0		19·63	508·0	65·8	736·0	65·0
	10	0		20·10	474·3	64·6	663·7	64·0
	18	0	25	15·03	466·0	60·8	642·9	60·9
	20	0		20·70	486·3	60·9	646·2	60·9
	22	0		22·72	479·5	61·6	644·8	61·4
July 26	0	0		26·97	481·5	63·7	630·0	63·0
	2	0		29·91	499·3	65·4	622·1	64·5
	4	0		29·31	508·7	66·3	632·2	65·4
	6	0		24·60	508·1	66·4	662·9	65·6
	8	0		23·50	508·4	66·1	666·4	65·5
	10	0		22·94	505·0	65·2	657·8	65·0
July 26	18	0	25	18·35	487·1	59·8	624·2	60·0
	20	0		19·02	489·9	59·7	611·1	60·0
	22	0		21·44	484·0	60·6	612·2	60·5
July 27	0	0		28·65	488·8	62·6	595·0	60·8
	2	0		31·30	505·3	64·9	627·7	64·0
	4	0		26·94	506·1	66·3	642·5	65·4
	6	40		19·67	512·2	66·4	666·4	65·5
	8	0		23·98	505·7	65·6	649·7	65·0
	10	0		24·33	508·6	64·0	641·0	63·9
	18	0	25	15·52	496·8	58·8	613·9	59·0
	20	9		20·37	494·3	58·7	624·4	58·7
	22	0		22·69	486·8	59·3	640·1	59·3
July 28	0	0		25·34	492·9	60·8	618·4	60·4
	2	0		27·36	488·5	62·7	630·1	61·8
	4	0		26·80	501·3	62·9	645·0	62·2
	6	0		23·39	507·6	62·0	640·5	61·6
	8	0		22·16	510·3	61·0	629·3	61·0
	10	0		21·53	505·4	60·0	641·0	60·3
	18	0	25	17·94	496·1	57·5	636·7	57·5
	20	0		17·22	498·2	57·9	639·8	57·8
	22	0		21·10	490·2	59·1	635·6	58·9
July 29	0	0		28·23	483·3	61·2	622·6	60·5
	2	0		32·08	501·7	63·7	624·8	62·6
	4	0		27·70	507·2	64·4	642·8	63·5
	6	0		22·85	517·9	63·6	650·9	63·0
	8	0		17·99	521·1	62·6	671·3	62·5
	10	0		20·20	507·3	61·3	648·2	61·4
July 30	18	0	25	24·72	496·1	58·4	595·2	58·5
	20	0		19·63	493·8	58·4	631·7	58·5
	22	0		21·95	485·2	58·9	640·0	58·8
July 31	0	0		26·19	484·4	60·0	622·3	59·6
	2	0		28·48	503·9	60·8	622·8	61·6
	4	0		……	510·7	64·2	643·2	64·2
	6	0		….. .	513·3	65·6	650·2	64·4
	8	0		20·10	513·1	64·8	657·2	64·0
	10	0		17·34	510·9	62·8	639·4	62·6
	18	0	25	18·08	498·6	58·3	640·9	58·5
	20	0		17·44	494·5	58·0	640·2	58·2
	22	0		18·87	491·3	58·0	643·5	58·0
Aug. 1	0	0		24·96	488·7	58·7	623·6	58·5
	2	0		28·44	505·6	60·2	620·1	59·7
	4	0		28·32	515·7	61·3	625·9	60·5
	6	0		23·48	510·7	61·4	629·7	60·8
	8	0		21·91	511·5	61·1	636·6	60·7
	10	0		20·58	509·7	60·3	635·2	60·2
	18	0	25	19·51	498·6	58·0	638·2	58·0
	20	0		16·35	495·8	57·9	637·3	57·9
	22	0		19·93	489·9	58·1	641·3	58·0
Aug. 2	0	0		27·31	490·1	58·9	617·5	58·6
	2	0		28·30	494·6	60·0	610·6	59·5
	4	0		25·01	500·9	60·8	630·9	60·1
	6	0		21·91	512·6	61·9	643·6	61·1
	8	0		21·04	513·2	62·2	634·4	61.5
	10	0		22·33	509·6	61·3	634·5	60·9

DECLINATION. Torsion removed, circle reading,—July 26^d 7^h, 40°; 30^d 23^h, 25°; 31^d 7^h, 52°.*
BIFILAR. k=0·0001205. BALANCE. k=0·000015 approximately.

---

*July 31^d 2^h. Observations made to determine the zero point of the Declination scale.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc Div.	°	Mic. Div.	°
Aug. 2	18	0	25	19·80	502·9	58·0	638·0	58·0
	20	0		17·41	497·5	58·0	644·7	58·0
	22	0		20·97	493·1	59·7	635·7	59·0
Aug. 3	0	0		26·89	488·6	61·4	619·6	60·7
	2	0		29·29	507·1	64·0	610·1	63·0
	4	0		29·08	535·3	66·7	604·0	65·2
	6	0		21·08	512·7	68·0	637·0	66·5
	8	0		21·79	526·7	67·3	617·9	66·0
	10	0		16·67	527·2	65·2	625·7	64·7
	18	0	25	17·78	497·4	59·4	602·5	59·5
	20	0		20·27	497·1	59·0	621·0	59·2
	22	0		20·82	466·7	60·4	625·5	60·2
Aug. 4	0	0		31·43	490·3	62·8	601·8	62·2
	2	0		29·42	512·9	65·0	682·0	64·0
	4	0		32·78	519·3	66·0	685·9	65·0
	6	0		13·68	537·3	67·0	772·5	66·5
	8	0		21·24	517·4	66·2	679·1	65·4
	10	0		20·61	511·5	64·9	624·7	64·4
	18	0	25	18·82	492·3	58·8	643·9	59·0
	20	0		19·22	484·0	58·4	643·3	58·7
	22	0		23·06	487·3	59·2	630·4	59·2
Aug. 5	0	0		24·71	499·7	61·3	623·7	60·9
	2	0		25·98	503·1	63·1	646·0	62·4
	4	0		23·24	509·5	64·4	628·8	63·5
	6	0		23·39	516·4	64·2	615·9	63·5
	8	0		19·40	516·0	63·2	647·9	63·0
	10	0		22·50	506·3	61·9	633·1	61·8
Aug. 6	18	0	25	20·37	499·4	56·9	612·5	57·1
	20	0		18·65	494·4	56·6	615·9	56·7
	22	0		21·61	490·6	57·5	620·7	57·4
Aug. 7	0	0		23·90	497·3	59·0	606·4	58·5
	2	0		26·80	501·9	60·6	610·1	59·7
	4	0		24·38	507·2	61·0	619·6	60·2
	6	0		23·66	514·9	61·0	630·4	60·4
	8	0		17·34	519·7	61·0	636·0	60·5
	10	0		22·67	510·3	61·2	622·0	60·6
	18	0	25	17·98	497·9	60·8	576·1	60·5
	20	0		17·17	494·8	60·7	609·9	60·5
	22	0		21·05	486·2	61·3	609·7	61·0
Aug. 8	0	7		26·06	489·1	62·5	590·0	61·9
	2	0		30·12	497·3	63·4	604·3	63·5
	4	0		26·72	511·8	65·7	624·5	64·6
	6	0		22·43	503·7	66·4	647·4	65·5
	8	0		16·65	512·1	65·9	665·8	65·1
	10	0		19·47	507·1	64·0	622·1	63·9
	18	0	25	37·51	461·8	60·6	475·2	60·7
	20	0		19·49	498·1	60·4	537·5	60·5
	22	0		21·95	478·8	61·0	605·6	61·0
Aug. 9	0	0		25·88	492·8	63·3	585·2	62·8
	2	0		31·04	496·6	66·4	613·8	65·4
	4	0		26·08	515·4	69·6	619·5	67·8
	6	0		21·01	508·6	70·2	641·8	69·5
	8	0		20·61	496·4	68·0	644·8	66·5
	10	0		23·88	506·3	67·0	628·3	66·0
Aug. 9	18	0	25	18·63	499·6	59·5	631·7	59·5
	20	20		18·68	488·4	58·7	646·2	58·8
	22	0		20·10	479·4	59·0	645·3	59·2
Aug. 10	0	0		28·27	490·7	61·6	607·0	61·0
	2	0		28·64	507·4	65·3	624·4	64·1
	4	0		25·02	512·0	67·8	637·6	66·0
	6	0		22·53	522·7	69·2	641·3	67·2
	8	0		21·58	509·7	69·0	628·6	67·0
	10	0		22·74	508·5	67·0	621·3	65·8
	18	0	25	18·55	501·7	59·0	636·1	59·3
	20	0		17·67	490·8	58·8	641·1	58·8
	22	0		22·60	483·3	59·6	637·6	59·5
Aug. 11	0	0		27·50	485·6	62·1	626·2	61·5
	2	0		30·63	501·5	64·7	626·3	63·5
	4	0		24·18	499·6	65·7	661·8	64·6
	6	0		22·57	513·5	66·6	653·3	65·5
	8	0		19·87	512·7	66·3	648·0	65·5
	10	0		20·62	524·8	65·1	617·5	64·7
	18	0	25	20·17	497·8	59·4	630·0	59·7
	20	0		20·43	497·3	59·1	636·9	59·5
	22	0		23·30	487·0	60·0	634·8	60·0
Aug. 12	0	0		27·60	485·7	62·9	623·4	62·3
	2	0		33·00	515·5	67·0	621·0	65·6
	4	0		23·32	512·2	70·0	634·2	68·3
	6	0		20·47	514·4	71·9	628·2	70·0
	8	0		17·49	507·7	69·7	635·5	68·5
	10	0		20·62	507·5	69·1	628·9	68·3
Aug. 13	18	0	25	18·37	494·0	61·7	632·8	62·3
	20	0		17·62	489·0	61·0	641·7	61·4
	22	0		19·87	486·0	61·7	652·7	61·9
Aug. 14	0	0		27·54	485·7	64·1	630·6	63·6
	2	0		30·65	508·4	68·0	642·3	66·5
	4	0		28·00	508·8	70·4	648·2	67·6
	6	0		25·78	509·2	69·4	657·7	67·4
	8	0		23·21	514·7	68·0	663·8	67·2
	10	0		20·60	503·4	66·2	618·6	65·7
	18	0	25	20·41	498·1	60·0	652·0	60·3
	20	0		19·24	493·8	60·0	651·7	60·0
	22	0		23 93	489·5	60·7	638·9	60·6
Aug. 15	0	0		29·26	490·0	61·2	627·3	61·0
	2	0		30·22	499·4	62·4	641·7	62·0
	4	0		26·64	505·2	64·0	654·4	63·2
	6	0		23·79	508·5	64·6	655·8	63·7
	8	0		22·63	507·5	64·3	643·0	63·5
	10	0		22·09	512·1	63·6	635·1	63·1
	18	0	25	19·34	502·4	61·6	640·9	61·5
	20	0		20·65	495·7	61·3	645·5	61·3
	22	0		22·92	492·4	61·7	641·6	61·5
Aug. 16	0	0		26·96	492·0	63·0	631·8	62·5
	2	0		27·53	504·6	65·2	632·2	64·2
	4	0		26·43	511·2	68·9	633·4	67·1
	6	0		21·48	510·0	71·0	643·0	68·0
	8	0		22·63	511·8	71·1	634·2	69·0
	10	0		22·79	510·3	69·0	629·7	67·9

DECLINATION. Torsion removed, circle reading,—Aug. 4^{d} 7^{h}, 67°; 5^{d} 3^{h}, 63°; 10^{d} 23^{h}, 69°; 13^{d} 23^{h}, 81°.*

BIFILAR. k=0·0001205. **BALANCE.** k=0·000015 approximately.

Aug. 7^{d} 2^{h}. Value of the torsion co-efficient determined for the Declinometer suspension thread.

Aug. 11^{d} 0^{h}—13^{d} 22^{h}. Magnet with short scale placed in the Declinometer, on account of observations for absolute horizontal intensity.—See *Introduction*.

* Aug. 12^{d} 3^{h}. Declination magnet removed, and the deflection magnet substituted, in order to determine its time of vibration.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Aug. 16	18	0	25	17·99	502·1	64·3	642·9	64·4
	20	0		19·06	496·3	63·9	644·3	64·0
	22	0		22·02	491·3	64·4	640·2	64·4
Aug. 17	0	0		27·14	493·2	66·7	623·9	65·9
	2	0		28·55	508·8	70·6	631·9	69·1
	4	0		25·34	515·5	72·8	617·2	70·3
	6	0		23·44	512·4	74·4	633·6	72·8
	8	0		23·17	513·6	73·8	644·1	72·5
	10	0		21·78	509·4	72·3	638·5	71·6
	18	0	25	19·56	502·2	65·0	638·2	64·5
	20	0		20·07	499·3	64·0	650·9	64·5
	22	0		21·95	492·3	64·3	655·8	64·6
Aug. 18	0	0		25·27	491·2	66·8	649·3	66·3
	2	0		27·83	506·4	71·0	635·4	69·6
	4	0		26·72	509·0	74·6	639·7	72·8
	6	0		24·60	512·8	75·7	663·6	74·0
	8	0		23·48	509·8	75·0	670·7	73·7
	10	0		23·26	508·9	73·1	665·6	72·5
	18	0	25	20·57	500·8	66·7	658·5	67·0
	20	0		19·02	493·1	65·7	671·5	66·0
	22	0		23·09	486·1	65·8	674·3	66·0
Aug. 19	0	0		26·55	491·0	68·8	649·3	68·0
	2	0		30·79	506·4	72·3	652·3	71·1
	4	0		27·96	511·0	75·6	652·0	74·0
	6	0		24·44	511·6	77·2	661·8	75·5
	8	0		23·26	509·3	76·0	667·7	74·5
	10	0		20·43	503·4	74·0	679·9	73·2
Aug. 20	18	0	25	20·67	499·4	57·3	672·8	58·0
	20	0		18·59	495·7	56·8	680·9	57·0
	22	0		23·19	491·3	57·2	692·8	57·4
Aug. 21	0	0		27·18	498·7	59·0	671·6	58·6
	2	0		28·87	518·1	60·9	676·9	60·0
	4	0		23·62	512·0	62·0	691·1	61·2
	6	0		21·75	511·0	62·0	682·9	61·3
	8	0		23·93	512·2	61·3	673·5	60·7
	10	0		21·04	509·9	60·1	674·6	60·0
	18	0	25	20·10	507·7	57·8	673·4	57·5
	20	0		19·27	504·9	57·7	670·8	57·5
	22	0		25·43	498·5	57·7	666·8	57·5
Aug. 22	0	0		31·76	498·8	58·0	663·3	58·0
	2	0		33·54	487·4	58·9	675·0	58·5
	4	0		31·22	504·7	59·9	718·9	59·4
	6	0		26·94	519·0	60·3	731·3	59·9
	8	0		26·45	522·5	60·0	741·8	59·5
	10	0		25·21	511·9	59·0	702·6	58·9
	18	0	25	20·74	483·9	53·7	649·7	54·0
	20	0		19·60	487·9	53·3	665·4	53·6
	22	0		25·01	483·1	54·6	670·7	54·6
Aug. 23	0	0		24·65	490·3	57·0	……	……
	2	0		28·33	506·6	60·0	……	……
	4	0		21·33	518·3	62·8	……	……
	6	0		21·41	527·7	64·3	……	……
	8	0		18·78	511·9	64·6	……	……
	10	0		18·48	524·8	62·7	……	……
Aug. 23	18	0	25	17·47	499·8	53·9	……	……
	20	0		16·91	486·9	52·9	……	……
	22	0		19·44	484·0	53·3	……	……
Aug. 24	0	0		24·69	495·4	56·7	……	……
	2	0		25·68	510·2	61·6	……	……
	4	0		24·52	521·6	65·5	……	……
	6	0		21·05	516·7	67·7	……	……
	8	0		20·10	511·3	67·4	……	……
	10	0		21·34	510·2	65·2	812·6	64·6
	18	0	25	19·00	503·5	58·7	800·6	58·9
	20	0		18·53	491·5	58·0	815·4	58·2
	22	0		23·61	481·6	58·7	818·3	58·7
Aug. 25	0	0		26·89	495·2	60·9	805·4	60·5
	2	0		29·29	503·3	63·9	803·5	63·0
	4	0		25·24	515·1	65·8	817·9	64·5
	6	0		21·29	516·2	65·6	832·0	64·6
	8	0		19·83	508·5	65·0	852·0	64·3
	10	0		21·73	506·4	64·1	815·8	64·0
	18	0	25	16·37	494·9	61·0	792·0	61·5
	20	0		16·53	488·3	59·8	804·2	60·4
	22	0		22·08	485·3	60·0	809·3	60·5
Aug. 26	0	0		28·20	487·9	62·2	811·4	62·3
	2	0		28·01	505·0	64·5	818·0	64·1
	4	0		24·47	505·3	65·0	831·6	64·5
	6	0		21·07	507·6	64·1	828·3	64·0
	8	0		21·31	508·7	63·1	805·8	63·4
	10	0		18·80	509·8	62·0	806·0	62·5
Aug. 27	18	0	25	20·34	503·5	56·7	793·5	57·0
	20	0		19·76	497·3	56·1	801·3	56·5
	22	0		20·07	491·2	56·7	809·8	56·8
Aug. 28	0	0		25·22	492·8	58·4	791·5	58·1
	2	0		29·93	510·0	59·5	789·7	59·0
	4	0		27·54	511·5	60·3	798·4	59·6
	6	0		23·73	512·8	61·2	810·9	60·5
	8	0		21·66	512·4	61·8	799·9	61·0
	10	0		21·46	510·2	61·7	792·9	61·0
	18	0	25	19·60	505·3	59·9	795·6	60·0
	20	0		17·78	496·3	59·0	809·1	59·3
	22	0		20·57	486·7	59·0	798·3	59·0
Aug. 29	0	0		26·55	490·6	60·6	788·7	60·3
	2	0		30·65	508·9	62·9	792·4	62·2
	4	0		27·11	517·1	65·5	783·6	64·3
	6	0		22·99	524·3	66·2	792·4	65·2
	8	0		21·21	514·0	66·0	786·3	65·0
	10	0		20·70	513·5	63·8	780·2	63·2
	18	0	25	18·92	507·3	54·7	798·7	55·2
	20	0		17·27	495·0	53·6	801·5	54·1
	22	0		20·60	492·8	54·1	794·9	54·5
Aug. 30	0	0		27·29	496·6	56·8	770·9	56·3
	2	0		29·39	507·1	59·4	767·2	58·5
	4	0		23·51	512·1	62·2	778·0	61·0
	6	0		20·98	517·8	64·3	777·9	62·7
	8	0		19·12	515·3	64·3	781·3	63·0
	10	0		19·80	513·3	62·7	778·0	62·0

DECLINATION. Torsion removed, circle reading,—Aug. 20^{d} 23^{h}, 86°; 21^{d} 7^{h}, 92°; 24^{d} 7^{h}, 92°; 30^{d} 3^{h}, 98°
BIFILAR. $k=0{\cdot}0001205$. BALANCE. $k=0{\cdot}000014$* approximately.

Aug. 21^{d} 0^{h}—4^{h}. Magnet with short scale in the Declinometer.
Aug. 21^{d} 7^{h}. Deflection magnet vibrated in the Declinometer box.
Aug. 23^{d} 0^{h}—24^{d} 6^{h}. Magnet with short scale inserted in the Declinometer box, and the Balance magnet removed, in order to determine its temperature correction. The Declination and Bifilar readings are corrected for the effect of the Balance.
* Aug. 24^{d} 7^{h}. Balance needle vibrated horizontally in the Declinometer box, and afterwards adjusted.
Aug. 30^{d} 4^{h}—Sept. 12^{d} 22^{h}. Magnet with short scale in the Declinometer box, while the magnet with the long scale was used in the Extra Declinometer box for temperature experiments and intensity observations.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	'	Sc. Div.	°	Mic. Div.	°
Aug. 30	18	8	25	17·92	510·3	57·6	778·1	57·6
	20	0		16·36	504·2	57·3	739·1	57·4
	22	0		19·74	494·3	57·8	788·3	57·8
Aug. 31	0	0		26·28	493·7	60·3	773·3	59·7
	2	0		30·35	504·0	64·0	772·5	62·7
	4	0		28·20	510·3	66·9	788·7	65·2
	6	0		25·87	512·0	67·3	804·0	66·0
	8	0		21·45	516·0	66·8	810·7	65·6
	10	0		21·82	516·1	65·5	787·3	65·0
	18	0	25	18·03	506·0	61·3	772·4	61·5
	20	0		21·86	504·2	61·1	767·1	61·3
	22	0		21·52	494·8	61·8	775·7	61·6
Sept. 1	0	0		28·59	504·7	63·4	……	……
	2	0		31·89	514·3	65·2	……	……
	4	0		27·78	525·1	66·0	……	……
	6	0		19·42	491·8	67·0	……	……
	8	0		17·60	511·8	66·9	……	……
	10	0		17·70	503·5	66·0	……	……
	18	0	25	19·14	505·4	62·8	……	……
	20	0		32·55	478·0	62·7	……	……
	22	0		24·41	483·5	63·8	……	……
Sept. 2	0	0		26·83	485·6	66·7	……	……
	2	0		28·05	492·4	68·6	……	……
	4	0		26·60	503·8	69·2	……	……
	6	0		20·36	507·5	69·7	……	……
	8	0		20·81	503·6	69·1	……	……
	10	0		10·78	516·1	68·1	……	……
Sept. 3	18	0	25	18·45	500·3	58·8	……	……
	20	0		20·06	495·0	58·3	……	……
	22	0		18·60	495·8	58·7	……	……
Sept. 4	0	0		23·68	498·0	60·6	……	……
	2	0		24·90	503·4	62·9	……	……
	4	0		23·70	514·2	64·9	……	……
	6	0		20·10	505·5	66·2	……	……
	8	0		19·16	512·0	65·9	……	……
	10	0		11·62	486·0	63·8	……	……
	18	0	25	21·93	491·5	55·0	……	……
	20	0		26·36	501·1	54·0	……	……
	22	0		22·05	481·7	54·4	……	……
Sept. 5	0	0		24·09	496·9	57·0	……	……
	2	0		29·36	497·5	61·6	830·1	60·5
	4	0		26·60	505·5	65·7	854·1	64·0
	6	0		21·82	509·9	67·9	887·5	66·0
	8	0		19·12	507·7	67·6	859·8	66·0
	10	0		17·47	505·5	66·0	800·4	65·1
	18	0	25	17·85	511·0	60·0	813·5	60·3
	20	0		22·36	496·4	59·8	817·5	60·0
	22	0		26·56	489·9	60·9	834·1	60·7
Sept. 6	0	0		27·37	499·1	64·0	805·0	63·4
	2	0		27·03	506·0	67·0	822·2	66·0
	4	0		24·15	504·9	69·3	821·8	68·0
	6	0		20·62	507·1	71·9	816·0	70·0
	8	0		20·10	510·2	71·0	815·0	69·8
	10	0		13·08	518·4	69·4	811·0	68·5
Sept. 6	18	0	25	17·92	505·0	61·8	800·2	62·3
	20	0		17·43	489·3	60·2	839·2	60·7
	22	0		17·45	489·2	60·5	848·7	60·9
Sept. 7	0	0		24·28	494·8	62·9	834·2	62·6
	2	0		27·07	499·6	66·0	840·1	65·2
	4	0		24·45	510·1	69·9	838·6	68·1
	6	0		19·57	506·3	72·1	839·5	70·5
	8	0		19·87	511·2	71·6	816·1	69·7
	10	0		19·18	509·1	69·6	816·2	68·5
	18	0	25	20·17	506·9	59·8	813·8	60·4
	20	0		18·07	496·4	58·6	844·2	59·0
	22	0		18·93	491·3	58·8	862·0	59·0
Sept. 8	0	0		25·46	493·9	61·9	847·0	61·5
	2	0		27.20	495·9	67·0	850·2	65·5
	4	0		25·12	518·2	71·8	837·1	69·5
	6	0		21·07	508·7	74·9	860·9	72·4
	8	0		20·55	507·6	74·0	823·7	72·0
	10	0		16·18	506·7	71·9	811·0	70·6
	18	0	25	20·92	504·8	63·2	808·0	63·6
	20	0		18·00	496·0	62·0	826·0	62·5
	22	0		22·85	482·9	61·9	840·6	62·3
Sept. 9	0	0		27·46	490·7	64·3	829·3	64·1
	2	0		30·33	505·3	68·9	822·3	67·5
	4	0		23·68	524·0	72·6	868·2	70·9
	6	0		26·88	504·5	74·4	864·0	72·5
	8	0		20·40	512·7	73·0	834·3	71·6
	10	0		13·89	504·1	71·0	823·7	70·0
Sept. 10	18	0	25	23·66	501·6	63·0	866·2	63·0
	20	0		23·40	494·7	62·9	869·7	63·0
	22	0		23·32	491·8	63·2	824·4	63·2
Sept. 11	0	10		29·25	495·2	65·0	829·0	64·6
	2	0		28·83	504·1	66·8	836·8	66·0
	4	0		24·63	511·8	68·8	834·5	67·5
	6	0		22·21	507·5	68·9	833·0	67·7
	8	0		19·63	513·5	67·6	832·9	66·9
	10	0		16·08	506·5	66·2	823·3	66·0
	18	0	25	22·05	507·9	63·2	822·0	63·5
	20	0		18·11	505·0	62·9	823·8	63·0
	22	0		19·59	492·5	62·9	816·0	63·0
Sept. 12	0	0		26·62	494·3	63·4	815·2	63·5
	2	0		26·86	500·1	65·0	830·6	64·5
	4	0		25·68	516·0	67·4	845·4	66·3
	6	0		24·11	506·2	69·3	861·9	67·5
	8	0		21·22	514·3	69·0	833·1	67·5
	10	0		19·44	507·5	67·1	812·3	66·5
	18	0	25	18·97	501·5	60·1	792·5	60·5
	20	0		17·49	500·2	59·1	819·1	59·5
	22	0		19·72	493·2	59·2	831·0	59·5
Sept. 13	0	0		23·79	496·5	61·1	824·5	60·9
	2	0		27·56	509·1	64·7	830·2	63·7
	4	12		23·95	511·0	67·9	829·5	66·4
	6	0		20·41	502·6	68·7	842·6	67·0
	8	0		19·13	511·6	67·1	818·9	66·0
	10	0		13·82	511·6	64·2	813·7	64·0

DECLINATION. Torsion removed, circle reading,—Sept. 4^{d} 1^{h}, 53°*; 12^{d} 23^{h}, 82°.

BIFILAR. k=0·0001205. BALANCE. k=0·000013* approximately.

---

* Sept. 1^{d}—5^{d}. The Balance magnet removed in order to determine its temperature correction: at 4^{d} 1^{h} it was vibrated horizontally in the Declinometer box, and afterwards re-adjusted.

Göttingen Mean Time of Declination Observation.			Declination.		Bifilar. Corrected.	Bifilar. Thermometer.	Balance. Corrected.	Balance. Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Sept. 13	18	0	25	19·26	504·3	55·2	832·7	55·9
	20	0		17·42	508·8	54·8	843·0	55·2
	22	0		19·94	501·5	55·2	861·0	55·5
Sept. 14	0	0		22·90	502·6	57·9	842·5	57·4
	2	0		26·17	511·3	61·3	825·0	60·0
	4	0		23·79	511·4	64·7	827·0	63·0
	6	0		20·37	516·1	65·9	831·5	64·0
	8	0		15·83	510·7	64·9	842·5	63·6
	10	0		17·81	512·1	63·6	830·3	63·0
	18	0	25	18·82	510·6	60·2	816·1	60·4
	20	0		16·80	508·4	60·1	830·0	60·1
	22	0		17·99	501·3	60·7	832·0	60·5
Sept. 15	0	0		23·34	502·1	62·1	809·6	61·7
	2	0		25·81	507·6	65·3	816·5	64·2
	4	0		22·32	505·2	68·3	816·0	66·6
	6	0		19·37	514·7	69·7	803·4	67·6
	8	0		19·13	511·8	68·7	799·3	67·0
	10	20		19·15	512·3	65·7	796·0	65·2
	18	0	25	17·61	510·7	59·0	817·5	59·4
	20	0		16·87	506·1	58·0	834·5	58·5
	22	0		20·10	501·0	58·2	840·6	58·4
Sept. 16	0	0		24·94	501·2	60·9	821·5	60·5
	2	0		24·71	511·2	64·0	826·9	63·2
	4	0		21·10	506·9	67·2	823·2	65·8
	6	0		19·94	514·3	68·2	826·1	66·9
	8	0		19·40	516·4	67·9	807·8	66·8
	10	0		18·99	516·1	66·5	806·3	65·9
Sept. 17	18	0	25	17·52	512·0	60·0	809·2	60·2
	20	0		16·62	506·0	59·8	821·2	60·0
	22	0		17·88	502·8	61·3	798·0	61·1
Sept. 18	0	0		27·29	503·0	63·7	796·1	63·1
	2	0		29·48	510·4	66·0	793·2	65·0
	4	0		23·54	511·4	65·9	807·3	65·3
	6	0		22·56	521·4	65·1	817·7	64·9
	8	0		20·40	517·6	64·0	820·9	63·0
	10	0		7·65	519·0	62·6	796·7	62·6
	18	0	25	19·98	502·9	55·7	761·4	56·2
	20	0		16·40	495·0	54·3	813·9	55·0
	22	0		20·16	475·4	54·3	824·3	54·7
Sept. 19	0	0		29·93	499·3	56·6	823·8	56·5
	2	0		27·19	512·9	60·0	828·6	59·3
	4	0		23·79	510·0	63·1	823·8	61·8
	6	0		19·29	509·0	64·3	838·7	63·0
	8	0		14·01	507·3	63·7	846·9	62·6
	10	0		19·89	511·2	62·3	780·5	61·8
	18	0	25	18·21	510·2	57·4	818·3	57·6
	20	0		18·15	496·1	56·9	838·0	57·0
	22	0		23·06	492·4	57·3	831·8	57·5
Sept. 20	0	0		23 39	500·5	60·6	822·0	60·0
	2	0		28·45	508·8	63·0	823·9	61·6
	4	0		28·67	514·7	65·9	830·2	64·6
	6	0		19·83	513·3	66·9	833·6	65·5
	8	0		16·17	512·4	66·0	831·0	65·3
	10	0		15·49	510·0	65·0	806·4	64·5
Sept. 20	18	0	25	20·41	503·0	64·7	777·1	65·0
	20	0		15·17	505·4	64·0	787·7	64·4
	22	0		18·62	492 8	64·0	801·8	64·5
Sept. 21	0	0		23·09	496·7	65·4	805·3	65·4
	2	0		26·32	500·0	67·3	799·6	67·0
	4	0		26·45	512·1	69·7	799·2	68·4
	6	0		22·43	506·3	70·8	828·9	69·5
	8	0		8·46	505·1	68·9	829·1	68·0
	10	0		18·75	509·6	66·8	812·0	66·9
	18	0	25	19·56	495·8	57·3	768·9	58·2
	20	0		19·00	500·5	55·9	791·7	56·6
	22	0		21·51	493·1	55·9	821·7	56·4
Sept. 22	0	0		24·87	499·0	58·3	813·6	58·1
	2	0		27·58	518·1	62·9	824·1	61·9
	4	0		26·19	517·1	67·4	868·5	65·5
	6	0		22·92	516·3	70 0	816·8	67·6
	8	0		18·55	513·5	69·0	813·4	67·5
	10	0		14·72	507·1	67·0	804·6	66·0
	18	0	25	20·11	500·3	57·4	815·4	58·0
	20	0		20·03	501·2	56·1	821·8	56·8
	22	0		20·32	490·2	56·1	824·7	56·5
Sept. 23	0	0		26·08	501·4	58·4	815·7	58·2
	2	0		26·22	512·3	63 1	851·9	62·0
	4	0		24·33	518·0	67·7	837·0	65·7
	6	0		15·19	526·9	70·7	834·0	68·3
	8	0		20·01	512·2	70·0	798·7	68·0
	10	0		19·83	511·3	68·1	789·5	67·1
Sept. 24	18	0	25	18·75	511·2	59·7	813 6	59·8
	20	0		16·80	507·3	58·6	824·7	58·6
	22	0		20·23	491·8	57·9	823·0	57·9
Sept. 25	0	0		24·80	497·9	57·7	804·0	57·6
	2	0		26·69	507·6	58·0	829·8	57·7
	4	0		21·29	504·4	58·4	849·3	58·0
	6	0		18·41	505 8	57·7	842·5	57·2
	8	0		18·28	510·9	56·3	838·9	56·1
	10	0		17·67	510·1	55·0	833·7	55·0
	18	0	25	18·55	508·8	50·8	820·4	50·9
	20	0		15·66	497·7	50·1	838·1	50·4
	22	0		19·96	488·2	50·6	832·9	50·5
Sept. 26	0	0		27·34	491·6	51·2	822·6	51·1
	2	0		28·47	502·5	52·6	827·1	52·0
	4	0		24·00	512·0	54·1	848·8	53·0
	6	0		23·07	499·9	54·0	859 4	54·7
	8	0		19·24	507·2	53·4	837·2	53·0
	10	0		12·90	504·9	52·7	812·8	52·5
	18	0	25	18·03	505·3	48·1	816·5	48·8
	20	0		16·97	499·6	47·4	836·3	48·0
	22	0		17·88	489·0	47·9	829·1	48·2
Sept. 27	0	0		24·06	489·1	49·8	811·2	49·6
	2	0		25·95	504·0	52·0	813·7	50·9
	4	0		25·14	512·8	52·3	826·2	51·5
	6	0		22·72	512 3	52·6	827·6	51·9
	8	0		22·92	512·9	51·6	814 7	51·0
	10	0		21·31	514·2	50·0	811·6	50·0

DECLINATION. Torsion removed, circle reading,—Sept. 19^{d} 23^{h}, 75°; 27^{d} 3^{h}, 73°.
BIFILAR. $k=0·0001205$. BALANCE. $k=0·000013$ approximately.

Sept. 26^{d}.—The Declination and Bifilar Magnetometers were supplied with closely fitting rectangular boxes, placed within the cylindrical boxes, for the purpose of destroying currents of air. The boxes of all the Magnetometers were covered inside and outside with gilt paper. The box of the Balance Magnetometer was removed after the observation at 4^{h}, and replaced before that at 6^{h}.

Göttingen Mean Time of Declination Observation. d.	h.	m.	DECLINATION. °	′	BIFILAR. Corrected. Sc. Div.	BIFILAR. Thermometer. °	BALANCE. Corrected. Mic. Div.	BALANCE. Thermometer. °
Sept. 27	18	0	25	20·32	507·6	45·9	759·7	46·5
	20	0		22·20	506·4	45·1	780·3	45·9
	22	0		23·66	478·5	45·3	822·2	45·9
Sept. 28	0	0		31·36	480·1	47·3	823·9	47·2
	2	0		30·89	501·2	50·0	838·2	49·1
	4	0		28·70	511·6	51·5	855·4	50·3
	6	0		23·06	512·4	51·9	847·0	50·7
	8	0		22·25	510·4	51·0	832·2	50·4
	10	0		20·57	509·4	50·0	835·2	49·9
	18	0	25	20·79	504·7	44·9	809·1	45·9
	20	0		21·39	504·8	43·9	820·4	45·0
	22	0		20·79	493·2	44·1	847·3	45·0
Sept. 29	0	0		25·05	495·4	46·2	812·5	46·4
	2	0		27·29	508·4	50·0	812·0	49·0
	4	0		26·45	519·7	51·9	817·7	50·5
	6	0		23·83	515·7	52·3	842·1	51·1
	8	0		17·99	502·9	52·1	854·3	51·1
	10	0		21·10	511·4	51·9	831·5	51·1
	18	0	25	19·36	513·8	51·9	778·4	51·4
	20	0		23·14	506·8	52·2	795·1	51·7
	22	0		22·25	508·2	53·6	791·7	52·8
Sept. 30	0	0		25·38	502·2	56·7	782·8	55·5
	2	0		24·85	500·8	60·0	793·4	58·2
	4	0		26·43	514·9	61·9	789·0	60·0
	6	0		23·93	504·9	62·6	824·4	61·0
	8	0		23·14	511·3	61·8	801·7	60·6
	10	0		20·63	512·9	60·8	782·4	60·1
Oct. 1	18	0	25	21·24	504·1	57·0	764·3	57·6
	20	0		23·53	497·9	56·1	779·5	56·9
	22	0		23·21	494·2	56·1	791·0	56·6
Oct. 2	0	0		27·47	498·4	57·0	789·5	57·2
	2	0		28·15	503·1	58·6	792·2	58·1
	4	0		23·27	489·9	59·7	811·1	59·0
	6	0		23·39	510·8	60·0	801·6	59·2
	8	0		21·32	509·0	58·7	805·4	58·4
	10	0		22·30	505·3	57·0	797·3	57·1
	18	0	25	22·16	506·5	51·6	792·6	52·2
	20	0		31·04	497·6	51·2	768·6	51·7
	22	0		25·19	497·4	51·5	789·5	51·5
Oct. 3	0	0		31·32	493·9	52·6	824·3	52·4
	2	0		28·15	506·0	54·3	801·3	53·6
	4	0		25·43	507·0	55·7	806·5	54·9
	6	0		22·62	508·5	56·0	808·8	55·4
	8	0		18·53	506·4	56·0	810·9	55·4
	10	0		20·88	511·7	55·7	798·2	55·2
	18	0	25	23·32	503·2	53·8	794·7	54·0
	20	0		21·37	505·5	53·6	804·2	53·5
	22	0		23·17	498·6	53·9	812·5	53·9
Oct. 4	0	0		27·51	500·3	55·9	812·1	55·0
	2	0		30·02	512·6	57·9	801·1	56·8
	4	0		25·14	519·3	60·3	803·1	58·8
	6	0		21·59	513·8	61·3	789·6	59·8
	8	0		22·96	515·0	61·0	781·3	60·0
	10	0		21·02	510·5	60·5	781·2	59·8
Oct. 4	18	0	25	23·46	511·4	58·1	737·3	58·3
	20	0		23·86	506·2	57·9	747·0	58·0
	22	0		23·93	486·7	57·9	781·0	57·9
Oct. 5	0	0		32·53	493·6	58·2	770·2	58·1
	2	0		30·69	505·4	60·0	782·8	59·1
	4	0		27·33	513·2	61·6	798·4	60·4
	6	0		25·31	505·2	61·5	849·6	60·5
	8	0		11·05	507·4	60·8	802·9	60·3
	10	0		19·67	506·0	60·1	766·3	60·0
	18	0	25	22·83	503·2	58·7	746·7	58·5
	20	0		20·50	501·4	58·7	777·2	58·5
	22	0		21·34	490·9	58·7	779·0	58·5
Oct. 6	0	0		28·50	491·3	59·2	765·6	58·9
	2	0		27·60	506·2	60·6	782·3	59·9
	4	0		23·17	512·4	61·1	790·7	60·5
	6	0		20·41	506·6	61·1	785·4	60·7
	8	0		21·35	508·6	60·7	775·7	60·4
	10	0		18·73	502·2	59·9	775·1	59·8
	18	0	25	21·29	502·8	56·7	757·1	57·0
	20	0		20·37	504·3	56·4	775·2	56·6
	22	19		22·35	489·1	56·9	782·4	57·0
Oct. 7	0	0		26·28	492·8	58·1	775·1	57·9
	2	0		27·43	504·7	60·0	767·4	59·2
	4	0		24·06	513·5	62·0	776·5	61·0
	6	0		22·16	512·5	62·0	765·9	61·0
	8	0		21·48	511·6	60·5	761·6	60·0
	10	0		21·32	507·1	59·1	767·6	59·3
Oct. 8	18	0	25	21·71	505·4	48·3	806·6	49·2
	20	0		19·87	505·7	47·7	815·1	48·5
	22	0		21·04	492·7	47·8	820·1	48·4
Oct. 9	0	0		25·18	489·6	49·1	822·1	49·2
	2	0		27·94	499·3	50·2	810·1	49·9
	4	0		25·22	506·9	50·8	814·6	50·3
	6	0		21·37	508·3	50·7	822·1	50·1
	8	0		23·17	513·8	50·1	814·5	49·9
	10	0		21·84	510·7	49·7	814·6	49·6
	18	0	25	21·98	511·7	47·7	812·8	48·0
	20	0		25·48	505·5	47·2	823·3	47·6
	22	0		23·10	499·1	47·2	819·2	47·5
Oct. 10	0	0		24·60	494·0	47·7	811·2	47·8
	2	0		29·29	508·4	48·7	808·5	48·5
	4	0		26·52	509·0	49·9	810·1	49·3
	6	0		23·06	512·4	50·1	811·8	49·5
	8	0		19·63	505·5	49·3	818·8	49·0
	10	0		15·74	499·9	48·1	809·2	48·3
	18	0	25	21·96	510·5	45·2	808·7	45·9
	20	0		21·24	504·4	44·9	819·8	45·5
	22	0		19·93	494·6	44·9	818·4	45·2
Oct. 11	0	0		25·36	497·6	44·9	805·6	45·3
	2	0		26·64	504·3	45·1	811·1	45·5
	4	0		25·19	517·1	45·3	819·2	45·5
	6	0		23·16	514·5	45·3	819·9	45·5
	8	0		22·32	513·0	45·0	821·3	45·4
	10	0		21·42	513·7	45·0	815·6	45·2

DECLINATION. Torsion removed, circle reading,—Oct. 6d 1h, 88°.

BIFILAR. k=0·0001205. BALANCE. k=0·000013 approximately.

Göttingen Mean Time of Declination Observation.				DECLINATION.		BIFILAR.		BALANCE.	
						Corrected.	Thermometer.	Corrected.	Thermometer.
	d.	h.	m.	°	'	Sc. Div.	°	Mic. Div.	°
Oct.	11	18	0	25	22·08	510·5	43·3	819·2	43·8
		20	0		20·82	507·5	43·2	818·9	43·5
		22	0		20·52	496·4	43·1	819·4	43·5
Oct.	12	0	0		26·84	500·7	43·8	805·5	44·0
		2	0		28·17	506·8	44·9	813·0	44·7
		4	0		23·79	513·2	46·1	825·4	45·5
		6	0		23·23	515·6	47·0	814·9	46·0
		8	0		22·22	515·4	45·9	813·7	45·5
		10	0		19·56	510·8	44·0	802·1	44·4
		18	0	25	20·70	508·1	37·7	820·8	38·9
		20	0		20·50	504·3	36·9	826·0	38·0
		22	0		21·24	499·5	37·1	826·8	38·0
Oct.	13	0	0		28·32	500·6	39·1	821·0	39·5
		2	0		30·13	513·5	42·0	835·5	41·5
		4	0		27·20	514·6	43·7	865·5	43·0
		6	0		23·50	513·7	43·6	848·7	43·0
		8	0		22·79	512·6	42·4	839·7	42·4
		10	0		22·43	512·9	41·1	833·0	41·5
		18	0	25	21·29	508·5	37·9	820·7	38·7
		20	0		20·30	512·5	37·5	824·6	38·3
		22	0		27·29	490·3	37·9	847·7	38·5
Oct.	14	0	0		28·57	502·4	40·2	841·2	40·2
		2	0		27·98	517·0	43·6	830·7	42·5
		4	0		25·14	517·5	45·6	841·2	44·3
		6	0		22·65	518·4	46·2	839·5	45·0
		8	0		22·72	509·9	45·0	868·5	44·5
		10	0		17·59	501·9	43·0	832·7	43·0
Oct.	15	18	0	25	21·91	504·6	34·9	814·2	36·2
		20	0		23·91	494·6	34·0	827·2	35·4
		22	0		24·13	493·2	34·0	834·1	35·0
Oct.	16	0	0		27·33	491·8	36·2	845·0	36·5
		2	0		25·96	512·8	39·9	856·0	39·3
		4	0		25·25	519·9	42·9	860·0	41·7
		6	0		22·36	520·3	43·3	858·4	42·4
		8	0		20·72	521·0	42·7	828·5	42·0
		10	0		12·36	549·3	41·5	828·9	41·5
		18	0	25	21·88	508·4	38·7	844·6	39·4
		20	0		24·60	494·3	38·5	841·9	39·2
		22	0		24·01	497·9	38·3	840·3	39·0
Oct.	17	0	0		24·89	495·9	38·5	846·4	39·0
		2	0		18·41	492·4	39·3	901·7	39·7
		4	0		25·32	508·5	39·1	884·6	39·5
		6	0		22·25	507·3	39·0	889·7	39·5
		8	0		22·67	507·6	38·9	855·6	39·3
		10	0		22·58	512·3	38·3	843·6	39·0
		18	0	25	22·32	500·3	34·9	833·0	36·0
		20	0		20·90	494·7	34·1	846·6	35·4
		22	0		20·77	494·8	34·2	851·6	35·6
Oct.	18	0	0		24·67	494·7	36·8	837·9	36·8
		2	0		27·50	518·5	42·0	830·6	41·7
		4	0		24·52	521·8	45·9	827·0	45·0
		6	0		23·00	519.6	49·0	832·8	47·8
		8	0		23·29	514·9	48·2	832·7	47·7
		10	0		16·11	518·9	49·9	816·5	49·8
Oct.	18	18	0	25	16·89	514·2	53·6	754·6	54·6
		20	0		16·43	514·5	53·4	794·0	54·9
		22	0		17·88	500·3	52·0	820·2	54·0
Oct.	19	0	0		22·65	503·8	53·7	805·8	55·3
		2	0		24·53	516·0	56·0	786·9	57·0
		4	0		22·08	518·8	58·3	792·9	58·9
		6	0		18·12	512·8	58·6	813·0	59·0
		8	0		19·71	512·3	58·1	816·2	59·0
		10	0		15·69	516·8	56·8	813·8	58·0
		18	0	25	17·98	497·1	47·7	759·3	49·5
		20	0		18·59	495·8	46·9	807·5	48·5
		22	0		19·72	490·3	46·9	826·0	48·3
Oct.	20	0	0		25·95	497·2	47·8	837·4	48·5
		2	0		25·10	511·0	49·0	836·1	49·0
		4	0		23·40	513·8	49·7	838·2	49·5
		6	0		22·23	514·9	49·9	833·0	49·6
		8	0		20·65	506·4	49·5	847·1	49·3
		10	0		21·02	510·6	49·2	830·7	49·2
		18	0	25	20·47	510·3	48·0	818·4	48·4
		20	0		20·25	507·3	48·0	830·1	48·3
		22	0		21·30	503·0	48·3	836·6	48·4
Oct.	21	0	0		24·00	505·9	48·9	829·8	48·6
		2	0		24·52	509·9	50·0	828·1	49·5
		4	0		22·42	514·4	51·5	828·4	50·5
		6	0		22·17	516·2	52·0	813·8	50·9
		8	0		21·24	514·9	51·1	813·3	50·4
		10	0		21·20	511·8	49·3	814·6	49·5
Oct.	22	18	0	25	20·77	511·1	49·9	797·4	50·0
		20	0		19·95	508·0	49·4	812·0	49·8
		22	0		21·90	499·0	49·5	817·4	49·6
Oct.	23	0	0		26·02	504·5	50·2	808·3	50·0
		2	0		25·87	510·8	51·2	816·4	50·7
		4	0		22·25	514·2	51·7	823·1	51·0
		6	0		22·05	515·8	51·3	805·5	50·9
		8	0		21·33	515·1	51·1	807·1	50·8
		10	0		20·77	513·1	51·2	810·8	50·9
		18	0	25	20·25	514·6	49·3	800·8	49·5
		20	0		19·40	508·9	48·7	814·2	49·0
		22	0		19·55	496·0	48·4	818·6	48·6
Oct.	24	0	0		26·86	502·7	48·6	809·9	48·7
		2	0		28·14	503·9	48·6	819·3	48·7
		4	0		23·13	508·5	48·0	831·9	48·3
		6	0		21·67	514·3	47·1	813·4	47·7
		8	0		21·13	512·0	46·2	812·4	47·0
		10	0		19·95	506·7	45·1	821·9	46·0
		18	0	25	19·65	510·9	40·2	825·2	41·6
		20	0		20·90	508·5	39·6	827·6	40·9
		22	0		22·57	496·2	39·3	833·3	40·5
Oct.	25	0	0		24·86	504·3	41·0	827·5	41·5
		2	0		25·65	511·0	43·6	820·7	43·2
		4	0		23·00	514·0	46·1	842·6	45·2
		6	0		23·28	517·6	47·2	840·1	47·0
		8	0		21·11	515·3	46·2	820·4	45·6
		10	0		20·34	510·9	44·9	820·8	44·9

DECLINATION. Torsion removed, circle reading,—Oct. 14^d 1^h, 97°; 17^d 23^h, 100°; 18^d 9^h, 110°;* 19^d 23^h, 93°.†
BIFILAR. $k=0·0001205$. BALANCE. $k=0·000013$ approximately.

---

* Oct. 18^d 0^h—8^h. Magnet with short scale in the Declinometer box.

† Oct. 19^d 22^h—25^d 22^h. Magnet with short scale in the Declinometer box.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Oct. 25	18	0	25	19·18	513·9	39·6	815·3	40·8
	20	0		24·82	507·6	38·8	808·5	40·8
	22	0		21·97	497·5	38·7	824·7	39·6
Oct. 26	0	0		25·27	493·4	40·1	853·8	40·6
	2	0		26·28	507·9	42·9	848·7	42·5
	4	0		22·99	500·8	44·9	879·6	44·0
	6	0		19·26	498·8	45·2	920·7	44·5
	8	0		20·34	508·3	44·6	861·7	44·3
	10	0		1·14	507·2	42·4	834·1	42·9
	18	0	25	21·04	507·9	36·3	802·4	38·0
	20	0		20·13	504·1	35·2	823·8	36·7
	22	0		19·93	493·8	35·0	839·2	36·1
Oct. 27	0	0		25·90	493·9	36·5	850·1	37·0
	2	0		24·17	515·1	39·6	857·8	39·3
	4	0		20·40	507·6	41·3	877·8	40·8
	6	0		19·84	510·3	41·9	861·5	41·4
	8	0		20·87	512·9	41·8	846·7	41·5
	10	0		19·93	510·6	41·0	835·0	41·0
	18	0	25	20·03	511·1	40·7	834·6	41·0
	20	0		20·57	511·0	41·1	833·0	41·1
	22	0		20·82	502·3	42·0	835·2	42·0
	23	0		20·90	502·0	42·6	825·9	42·5
Oct. 28	0	0		23·29	495·3	43·0	830·1	42·9
	2	0		23·93	508·9	44·0	828·3	43·6
	4	0		22·97	516·5	44·7	833·7	44·2
	6	0		20·63	516·5	44·4	827·5	44·1
	8	0		20·57	515·0	44·0	824·1	44·0
	10	0		18·75	512·9	43·3	820·8	43·5
Oct. 29	18	0	25	19·39	506·2	37·5	820·9	38·9
	20	0		18·60	507·4	36·7	830·3	38·0
	22	0		19·83	495·4	36·3	841·3	37·5
	23	0		23·32	495·0	36·1	830·2	37·4
Oct. 30	0	0		24·74	494·5	36·3	836·7	37·4
	2	0		27·36	497·2	36·7	851·5	37·5
	4	0		25·92	507·1	36·9	873·3	37·5
	6	0		21·37	510·1	37·0	864·2	37·6
	8	0		22·62	511·0	37·3	851·3	37·8
	10	0		17·76	507·3	37·7	854·1	38·0
	18	0	25	19·39	512·4	37·5	826·8	38·0
	20	0		20·07	507·8	37·0	836·9	37·6
	22	0		21·28	498·0	36·7	842·8	37·4
	23	0		27·70	491·7	37·0	840·4	37·5
Oct. 31	0	0		26·79	500·4	38·3	841·4	38·5
	2	0		23·93	511·7	41·8	841·9	41·0
	4	0		22·65	517·1	44·1	847·1	43·0
	6	0		18·86	513·8	44·6	846·2	43·5
	8	0		12·27	525·2	43·4	823·0	43·0
	10	0		17·88	509·3	41·7	824·4	42·0
	18	0	25	16·85	508·7	36·6	800·3	37·7
	20	0		17·96	507·1	36·0	809·7	37·0
	22	0		17·14	503·3	35·7	831·7	36·7
	23	9		19·54	498·1	35·9	842·7	36·8
Nov. 1	0	0		21·98	503·2	36·3	844·0	37·0
Nov. 1	2	0	25	23·64	511·7	38·3	847·5	38·4
	4	0		20·77	517·8	41·0	849·4	40·4
	6	0		18·89	517·8	41·9	832·0	41·2
	8	0		18·59	515·7	41·4	828·8	41·0
	10	0		14·42	514·5	40·2	829·0	40·5
	18	0	25	17·07	511·6	37·7	811·2	38·5
	20	0		18·21	509·1	37·3	821·1	38·0
	22	0		19·22	505·8	37·2	831·4	38·0
	23	0		20·20	506·4	37·5	832·3	38·1
Nov. 2	0	0		24·80	510·5	38·3	829·6	38·6
	2	0		25·24	517·6	40·6	830·7	40·4
	4	0		22·85	523·5	42·0	822·7	41·5
	6	0		22·00	525·3	42·6	817·9	42·1
	8	0		20·13	510·3	42·6	834·9	42·3
	10	0		17·07	511·6	42·4	830·2	42·5
	18	0	25	21·98	508·4	38·0	783·9	39·3
	20	0		24·11	507·8	37·6	797·6	38·6
	22	0		21·10	498·0	37·2	825·5	38·3
	23	0		24·94	495·0	37·2	821·2	38·2
Nov. 3	0	0		26·45	493·5	37·5	837·7	38·3
	2	0		25·51	503·7	38·3	859·6	38·8
	4	0		22·33	512·6	39·9	855·0	40·0
	6	0		21·28	514·4	40·6	840·8	40·5
	8	0		13·71	517·6	40·6	836·5	40·5
	10	0		21·05	510·2	40·2	832·6	40·3
	18	0	25	19·89	514·2	41·8	816·2	41·7
	20	0		20·48	513·5	42·9	820·2	42·9
	22	0		20·70	505·5	44·0	819·5	43·9
	23	0		23·76	505·8	44·8	816·7	44·5
Nov. 4	0	0		25·54	506·4	45·7	823·9	45·4
	2	0		24·77	522·7	47·8	814·4	47·0
	4	0		21·95	521·8	49·7	805·2	48·5
	6	0		21·78	517·2	49·9	793·3	49·0
	8	0		21·84	518·1	49·7	789·2	48·9
	10	0		20·56	512·1	48·8	798·2	48·4
Nov. 5	18	0	25	20·60	512·2	46·2	801·8	46·3
	20	0		20·50	511·0	46·8	801·3	46·5
	22	0		23·19	506·4	47·3	801·3	47·0
	23	0		25·78	505·8	47·8	801·0	47·5
Nov. 6	0	0		27·91	507·4	48·6	805·1	48·0
	2	0		27·87	514·2	49·6	812·1	49·0
	4	0		23·90	511·2	50·9	816·2	50·0
	6	0		20·70	515·6	51·0	800·3	50·0
	8	0		20·10	514·4	49·9	792·1	49·4
	10	0		18·62	509·9	48·4	795·3	48·4
	18	0	25	20·13	510·9	46·3	792·4	46·5
	20	0		19·63	508·8	46·1	796·9	46·3
	22	0		19·68	502·0	46·0	803·8	46·2
	23	0		21·24	497·9	46·3	810·8	46·5
Nov. 7	0	0		23·24	501·8	47·0	808·2	47·0
	2	0		24·82	513·6	48·7	810·1	48·3
	4	0		24·53	509·2	49·8	822·9	49·0
	6	0		20·72	509·9	49·3	826·1	48·8
	8	0		20·45	511·2	48·0	814·6	47·9
	10	0		18·59	507·0	46·7	806·2	46·9

DECLINATION. Torsion removed, circle reading,—Oct. 25d 23h, 111°; 31d 1h, 108°; Nov. 1d 23½h, 109°.
BIFILAR. $k=0·0001205$. BALANCE. $k=0·000013$ approximately.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Nov. 7	18	0	25	20·55	508·2	43·1	807·4	43·8
	20	0		19·84	505·7	42·2	811·8	43·0
	22	0		18·28	501·3	41·7	811·7	42·4
	23	0		19·77	501·0	41·7	813·0	42·4
Nov. 8	0	0		21·05	503·6	42·0	812·5	42·5
	2	0		21·43	503·4	42·9	824·6	43·1
	4	0		22·62	510·0	43·6	833·2	43·5
	6	0		18·37	512·2	43·0	823·1	43·0
	8	0		18·42	508·6	41·8	822·4	42·0
	10	0		15·45	499·7	40·1	830·0	40·7
	18	0	25	19·95	501·0	36·2	804·6	36·9
	20	0		20·92	511·3	35·6	795·6	36·2
	22	0		19·05	......*	......	810·8	35·9
	23	0		21·82	......	......	814·9	35·9
Nov. 9	0	0		23·77	456·0	36·4	814·1	36·2
	2	0		22·07	462·6	37·2	827·8	37·1
	4	0		19·95	466·0	38·6	837·1	38·3
	6	0		19·12	465·4	38·8	829·7	38·5
	8	0		18·37	465·4	38·3	824·8	38·3
	10	0		17·90	464·1	38·0	820·0	38·0
	18	16	25	18·26	466·1	37·2	815·5	37·7
	20	0		18·35	466·1	37·3	818·7	37·9
	22	0		18·95	460·0	37·7	824·5	38·0
	23	0		19·70	460·5	37·9	824·1	38·1
Nov. 10	0	0		20·51	462·6	38·2	818·7	38·5
	2	0		21·33	466·3	38·9	822·7	39·0
	4	0		19·98	465·3	39·6	838·5	39·5
	6	0		20·08	467·0	39·9	831·6	40·0
	8	0		18·37	505·2†	42·4	828·0	40·5
	10	0		18·07	507·0	41·9	811·2	40·7
	18	0	25	16·87	510·4	40·8	808·4	41·0
	20	0		17·62	508·9	41·3	810·8	41·3
	22	0		19·61	501·7	41·9	818·3	41·8
	23	0		19·95	500·8	42·1	815·9	42·0
Nov. 11	0	0		21·05	501·9	42·7	818·5	42·5
	2	0		21·69	506·0	43·8	820·1	43·5
	4	0		20·90	507·7	44·9	814·4	44·5
	6	0		19·08	503·2	45·0	818·7	44·9
	8	0		18·82	505·2	45·0	817·8	44·9
	10	0		16·27	506·8	44·7	816·5	44·7
Nov. 12	18	0	25	18·86	509·5	40·9	804·4	41·6
	20	0		17·88	520·7	40·9	803·7	41·6
	22	0		18·63	501·3	41·0	802·8	41·5
	23	0		19·31	503·0	41·1	......	......
Nov. 13	0	0		21·91	507·4	41·6	......	......
	2	0		22·44	511·3	43·3	......	......
	4	0		24·80	500·7	45·7	......	......
	6	0		23·23	511·8	46·0	......	......
	8	0		15·30	502·6	45·3	......	......
	10	0		16·87	504·1	45·0	805·0	45·0
	18	0	25	18·37	502·0	40·0	833·6	41·0
	20	0		18·56	505·4	39·1	837·7	40·4
	22	0		20·62	501·4	38·6	842·0	39·5
	23	7		20·11	501·4	38·6	831·9	39·5
Nov. 14	0	0		22·87	503·4	38·9	827·0	39·8
Nov. 14	2	0	25	19·15	508·2	41·0	849·2	41·4
	4	0		20·40	515·8	43·0	865·3	42·9
	6	0		17·79	513·4	43·6	864·8	43·4
	8	0		17·23	510·2	42·9	865·6	43·0
	10	0		15·09	503·8	41·8	869·2	42·0
	18	35	25	17·40	506·7	38·6	865·2	39·2
	20	0		18·13	503·5	38·3	867·1	39·0
	22	0		17·19	504·6	38·2	870·2	38·8
	23	0		18·45	502·0	38·1	860·5	38·8
Nov. 15	0	0		20·08	503·3	38·2	860·3	38·9
	2	0		22·99	510·4	38·7	868·6	39·0
	4	0		20·48	507·9	38·9	884·0	39·4
	6	0		20·43	507·5	39·1	873·0	39·5
	8	0		15·49	508·2	39·8	880·0	40·1
	10	0		19·53	511·7	40·0	859·5	40·5
	18	0	25	18·15	511·6	38·0	842·7	38·5
	20	0		19·15	504·9	37·5	863·6	38·0
	22	0		19·29	504·8	37·1	858·7	37·7
	23	0		19·80	502·7	37·1	859·8	37·7
Nov. 16	0	0		20·94	504·6	37·2	858·3	37·8
	2	0		21·21	507·6	37·8	855·9	38·2
	4	0		20·63	513·4	38·6	865·7	38·9
	6	0		21·98	512·8	38·9	864·9	39·0
	8	0		15·86	505·3	38·8	877·8	39·0
	10	0		15·19	504·5	38·8	882·3	39·2
	18	0	25	19·86	509·7	40·5	846·0	40·6
	20	0		17·86	511·7	41·8	849·5	41·6
	22	0		19·06	508·9	42·9	852·5	42·8
	23	0		20·41	509·0	43·7	850·3	43·9
Nov. 17	0	0		21·02	509·2	46·0	861·5	45·0
	2	0		21·35	515·7	46·3	859·3	45·3
	4	0		19·71	519·1	48·2	854·2	46·4
	6	0		18·65	516·7	47·0	851·4	46·3
	8	0		19·15	514·5	45·8	852·3	45·5
	10	0		16·71	514·4	44·7	853·3	45·0
	18	0	25	18·16	509·8	41·0	846·1	41·7
	20	0		18·01	509·0	40·1	849·0	41·0
	22	0		19·09	507·2	39·8	852·4	40·6
	23	0		20·20	507·3	39·8	840·7	40·5
Nov. 18	0	0		21·58	510·8	40·0	844·0	40·8
	2	0		21·91	515·4	40·9	848·9	41·3
	4	0		21·04	518·4	42·0	852·9	42·0
	6	0		21·21	513·6	42·0	858·8	42·0
	8	0		19·89	510·0	41·4	874·1	41·7
	10	0		17·91	509·7	40·7	865·2	41·0
Nov. 19	18	0	25	19·60	515·7	40·9	840·1	41·3
	20	0		18·25	514·7	41·1	844·8	41·5
	22	0		18·28	510·4	41·3	846·6	41·6
	23	0		19·87	510·3	41·7	845·3	42·0
Nov. 20	0	0		21·15	512·3	41·9	838·4	42·0
	2	0		21·34	515·8	42·0	844·4	42·1
	4	0		19·67	518·2	42·9	851·1	42·9
	6	0		19·29	519·6	42·9	843·2	43·0
	8	0		19·02	517·1	42·3	841·7	42·5
	10	0		18·48	515·6	41·8	844·3	42·0

DECLINATION. Torsion removed, circle reading,—Nov. 7^{d} 21^{h}, 114°; 13^{d} 23^{h}, 117°; 15^{d} 1^{h}, 108½°.‖

BIFILAR. *k*†=0·0001300. BALANCE. *k*‡=0·000014 approximately.

Nov. 7^{d} 22^{h}—15^{d} 0^{h}. Magnet with short scale in the Declinometer box.

* Nov. 8^{d} 22^{h}. Bifilar magnet removed for the purpose of determining its temperature correction; a spare magnet was substituted, and the instrument adjusted, the value of *k* being 0·0002263.

† Nov. 10^{d} 8^{h}. Bifilar re-adjusted; observation made at 8^{h} 40^{m}.

‡ Nov. 12^{d} 23^{h}—13^{d} 10^{h}. Balance magnet removed for the purpose of determining its temperature correction.

‖ Nov. 14^{d} 2^{h}. Deflecting magnet vibrated in the Declinometer box.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Nov. 20	18	0	25	19·87	518·2	41·0	831·9	41·5
	20	0		18·35	516·4	41·1	835·5	41·5
	22	0		17·34	513·5	41·3	839·9	41·6
	23	0		19·20	513·9	41·7	836·1	42·0
Nov. 21	0	0		20·95	516·2	42·3	835·9	42·5
	2	0		20·82	518·5	43·9	845·6	43·8
	4	0		19·89	519·0	44·5	845·6	44·2
	6	0		19·26	516·3	44·0	851·5	44·1
	8	0		14·28	507·3	43·8	864·0	44·0
	10	0		17·81	512·5	43·6	847·9	43·9
	18	0	25	19·17	516·6	46·3	835·8	46·0
	20	0		18·55	516·7	46·2	830·8	46·0
	22	0		18·95	513·4	46·1	829·8	46·0
	23	0		19·83	513·1	46·0	825·1	46·0
Nov. 22	0	0		21·82	514·5	46·1	822·3	46·2
	2	0		21·91	512·8	46·0	834·2	46·0
	4	0		19·26	514·4	45·8	845·9	46·0
	6	0		19·02	515·4	45·2	846·5	45·5
	8	0		18·41	514·0	44·1	841·2	44·7
	10	0		18·12	513·9	43·0	840·7	43·9
	18	0	25	16·10	515·8	39·0	836·1	40·0
	20	0		18·90	511·2	38·8	831·1	39·5
	22	0		19·46	507·0	38·7	840·2	39·4
	23	0		20·34	504·5	38·6	834·7	39·2
Nov. 23	0	0		21·55	508·0	38·6	832·8	39·1
	2	0		20·54	508·6	38·9	855·7	39·5
	4	0		21·41	511·6	39·0	859·0	39·5
	6	0		18·46	514·6	39·0	859·5	39·5
	8	0		17·12	513·1	38·9	851·7	39·4
	10	0		16·71	513·2	38·7	852·9	39·1
	18	0	25	18·21	514·8	35·8	837·9	36·5
	20	0		17·29	512·3	35·0	837·7	36·0
	22	0		17·34	510·4	34·7	835·7	35·5
	23	0		19·19	512·9	34·9	828·0	35·5
Nov. 24	0	0		21·58	516·6	35·3	826·8	36·0
	2	0		21·17	524·5	38·6	843·9	39·1
	4	0		21·41	519·4	43·2	869·0	43·4
	6	0		19·89	524·0	44·9	857·5	44·9
	8	0		19·86	519·4	47·0	865·0	47·5
	10	0		16·71	523·0	51·4	858·6	52·2
	18	0	25	17·81	521·9	55·3	848·3	57·0
	20	0		17·89	522·8	55·8	838·2	57·5
	22	0		18·46	516·2	55·6	837·8	57·0
	23	0		19·60	512·8	55·0	839·1	57·0
Nov. 25	0	0		20·63	510·7	54·7	848·9	56·5
	2	0		20·40	514·4	54·6	854·9	56·8
	4	0		19·39	517·3	54·8	860·1	56·7
	6	0		18·38	518·5	53·9	866·8	55·9
	8	0		18·41	519·3	54·2	859·6	56·5
	10	0		17·91	516·9	54·0	863·6	56·3
Nov. 26	18	0	25	17·91	521·0	48·7	844·7	48·7
	20	0		18·05	519·2	48·9	847·6	48·9
	22	0		18·01	516·3	49·0	844·2	49·0
	23	0		19·22	515·0	49·1	838·8	49·0
Nov. 27	0	0		20·34	516·8	51·3	839·6	49·5
Nov. 27	2	0	25	20·54	520·2	52·2	844·1	50·0
	4	0		19·02	518·1	51·9	843·9	50·1
	6	0		18·41	516·6	50·7	841·7	49·9
	8	0		18·38	516·6	50·0	837·2	49·6
	10	0		17·86	515·1	49·5	840·5	49·5
	18	0	25	17·04	516·2	48·4	833·9	48·5
	20	0		18·48	517·7	48·3	831·2	48·5
	22	0		17·41	512·9	48·2	839·0	48·5
	23	0		18·21	512·1	48·2	837·5	48·5
Nov. 28	0	0		19·63	512·3	48·2	836·9	48·5
	2	0		20·88	515·9	48·2	840·1	48·7
	4	0		21·14	512·6	48·3	851·0	48·7
	6	0		20·54	508·4	48·3	862·3	48·5
	8	0		17·94	511·5	48·2	880·9	48·7
	10	0		17·20	511·3	48·3	866·0	49·0
	18	0	25	17·78	517·5	47·4	836·7	47·0
	20	0		18·01	515·6	47·0	840·0	46·8
	22	9		18·48	509·0	46·6	842·5	46·4
	23	0		19·81	511·5	46·4	836·6	46·4
Nov. 29	0	0		20·75	511·2	46·3	837·5	46·5
	2	0		19·93	512·1	46·6	848·1	47·3
	4	0		20·54	508·5	47·3	859·6	48·0
	6	0		17·85	516·3	47·6	851·8	47·5
	8	0		16·67	515·3	47·0	846·3	46·9
	10	0		16·44	515·0	46·3	846·0	45·9
	18	0	25	15·99	515·1	42·3	837·8	41·2
	20	0		17·72	511·7	41·5	844·2	40·5
	22	0		18·65	509·4	41·0	850·1	40·4
	23	0		19·29	511·3	40·8	845·6	40·6
Nov. 30	0	0		19·37	511·8	40·8	849·4	40·8
	2	0		18·65	514·9	40·9	847·3	41·1
	4	0		17·20	516·6	41·4	846·9	42·0
	6	0		17·27	516·3	42·2	845·7	43·3
	8	0		14·25	515·9	43·0	850·2	44·2
	10	0		16·70	514·2	44·0	850·6	45·0
	18	0	25	17·27	513·0	43·7	832·3	43·5
	20	0		16·44	517·9	42·9	831·2	42·5
	22	0		18·55	507·0	42·0	836·9	41·5
	23	0		21·78	508·2	41·8	841·9	41·3
Dec. 1	0	0		22·11	510·0	41·3	844·0	41·0
	2	0		19·74	511·7	40·9	852·4	40·8
	4	0		21·28	511·1	40·6	856·8	40·6
	6	0		17·67	506·2	40·2	875·7	40·3
	8	0		13·98	508·9	39·9	872·1	39·5
	10	0		10·31	507·9	39·0	868·1	38·5
	18	0	25	17·69	513·0	36·0	838·1	35·5
	20	0		16·38	515·6	35·7	835·5	35·3
	22	0		17·88	503·9	35·6	845·4	35·8
	23	0		21·31	501·5	35·7	848·5	36·3
Dec. 2	0	0		23·29	505·1	36·0	848·8	36·9
	2	0		25·75	496·8	37·3	879·4	39·6
	4	0		23·73	512·5	38·6	887·5	39·9
	6	0		19·24	517·0	39·7	869·3	40·9
	8	0		18·45	515·2	40·4	855·2	41·5
	10	0		17·88	514·6	40·8	851·2	41·6

DECLINATION. Torsion removed, circle reading,—Nov. 23^d 1^h, 112½°; 29^d 1^h, 116½°.
BIFILAR. k=0·0001300. BALANCE. k=0·000014 approximately.

Nov. 27^d 18^h. The temperature of the Bifilar magnet, after this, is obtained from a thermometer with its bulb resting in a cup in a brass bar.

Göttingen Mean Time of Declination Observation.				DECLINATION.		BIFILAR.		BALANCE.	
						Corrected.	Thermometer.	Corrected.	Thermometer.
	d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Dec.	3	18	0	25	18·68	517·8	45·9	817·3	46·5
		20	0		20·14	515·1	46·0	820·1	47·0
		22	0		19·80	513·3	46·6	820·6	47·2
		23	0		19·29	513·7	46·7	817·7	47·5
Dec.	4	0	0		20·47	511·9	46·8	818·0	47·5
		2	0		21·44	513·7	47·3	825·4	48·3
		4	0		19·53	513·2	47·8	830·8	48·5
		6	0		18·03	514·1	48·0	829·3	48·7
		8	0		17·61	513·9	48·0	829·6	48·5
		10	0		17·38	511·5	48·0	837·8	48·5
		18	0	25	18·92	517·5	47·8	823·3	48·2
		20	0		18·05	517·8	47·9	824·8	48·2
		22	0		18·41	514·8	47·9	822·5	48·2
		23	0		19·31	508·9	47·9	823·3	48·5
Dec.	5	0	0		20·50	510·7	48·0	824·5	48·5
		2	0		22·63	514·0	48·2	841·1	48·9
		4	0		22·89	512·6	48·3	843·5	49·0
		6	0		17·94	512·5	48·2	850·2	48·5
		8	0		17·64	507·4	47·9	854·3	47·7
		10	0		17·95	509·5	47·1	853·9	46·7
		18	0	25	19·86	514·9	44·1	839·3	43·7
		20	0		20·45	515·0	43·9	839·8	43·5
		22	0		21·32	512·4	43·6	841·5	43·4
		23	0		24·74	508·5	43·5	846·0	43·4
Dec.	6	0	0		24·57	511·0	43·4	847·2	43·5
		2	0		25·58	513·0	43·6	853·0	44·0
		4	0		22·62	516·2	44·0	857·8	44·7
		6	0		20·23	516·7	44·2	850·0	44·8
		8	0		19·37	511·8	44·3	852·0	44·7
		10	0		19·15	502·2	44·5	850·2	45·0
		18	0	25	17·88	520·5	44·2	816·1	44·7
		20	0		19·87	516·0	44·3	827·8	44·9
		22	0		20·70	514·2	44·5	832·8	45·0
		23	0		21·68	511·4	44·6	830·2	45·3
Dec.	7	0	0		23·26	512·1	44·7	831·2	45·5
		2	0		22·50	517·8	45·0	837·2	46·0
		4	0		20·60	518·0	45·8	843·6	46·5
		6	0		20·75	518·4	47·3	838·9	47·3
		8	0		20·34	515·6	47·0	832·4	48·0
		10	0		18·79	513·7	47·8	832·3	48·7
		19	0	25	19·89	518·8	47·0	819·4	47·0
		20	40		20·50	517·5	46·8	822·6	46·8
		22	0		20·61	514·6	46·6	821·3	46·5
		23	0		22·11	515·7	46·4	817·1	46·5
Dec.	8	0	0		22·80	515·7	46·4	823·7	46·5
		2	0		22·35	507·5	46·5	829·1	46·8
		4	0		23·86	511·2	46·6	850·1	47·0
		6	0		25·14	510·6	46·6	874·8	47·0
		8	0		17·88	502·8	46·7	947·9	47·2
		10	0		8·23	494·4	46·9	851·2	47·4
		18	0	25	22·55	530·7	46·3	816·0	46·5
		20	0		24·24	533·2	46·1	792·0	46·5
		22	0		20·20	513·6	46·0	818·2	46·1
		23	0		21·28	513·1	45·9	813·0	46·1
Dec.	9	0	0		22·58	512·5	45·9	826·9	46·3
Dec.	9	2	0	25	24·38	516·3	46·0	834·2	46·5
		4	0		21·98	520·0	46·3	843·4	47·0
		6	0		22·36	512·2	46·7	853·7	47·0
		8	0		9·84	527·3	46·7	852·5	47·0
		10	0		18·15	510·4	46·9	849·0	47·7
Dec.	10	18	20	25	23·10	511·1	46·4	778·0	46·9
		20	0		19·20	512·9	46·3	804·8	46·7
		22	0		20·99	501·9	46·2	821·8	46·6
		23	0		21·86	514·0	46·2	821·5	46·7
Dec.	11	0	0		23·19	511·2	46·2	832·1	46·9
		2	0		23·44	515·3	46·7	841·8	47·5
		4	0		23·16	517·7	47·1	852·5	48·0
		6	0		22·72	513·1	47·6	869·3	48·1
		8	0		6·05	530·6	47·9	867·9	48·9
		10	0		19·34	510·6	48·0	852·5	48·6
		18	0	25	21·29	505·7	47·7	826·1	48·0
		20	0		21·28	518·9	47·5	834·0	47·9
		22	0		20·63	514·3	47·2	832·4	47·4
		23	0		20·97	512·9	47·1	830·3	47·4
Dec.	12	0	0		23·93	511·9	47·0	835·0	47·3
		2	0		27·87	510·7	47·0	851·8	47·4
		4	0		21·98	515·7	47·0	887·4	47·6
		6	0		14·78	517·4	47·1	869·9	47·5
		8	0		16·55	506·2	47·3	871·1	48·2
		10	0		19·39	513·9	47·3	826·1	47·8
		18	0	25	20·60	515·0	47·0	832·0	47·4
		20	0		21·10	514·3	47·0	832·3	47·5
		22	0		20·60	512·9	47·0	838·8	47·3
		23	0		21·41	512·9	47·0	835·9	47·3
Dec.	13	0	0		22·22	513·5	46·9	839·5	47·2
		2	0		22·99	514·9	46·9	838·0	47·3
		4	0		21·84	518·8	46·9	846·6	47·3
		6	0		20·61	517·3	46·9	846·5	47·2
		8	0		13·62	504·8	46·8	881·4	47·1
		10	0		21·28	512·6	46·9	849·7	47·2
		18	0	25	21·17	514·8	46·9	839·4	47·3
		20	25		21·55	511·8	47·0	835·8	47·5
		22	0		21·35	512·5	47·1	835·2	47·5
		23	0		22·13	511·4	47·0	834·6	47·5
Dec.	14	0	0		23·50	510·9	47·0	837·4	47·5
		2	0		21·95	513·5	48·2	844·1	47·9
		4	0		20·74	517·5	48·2	845·7	48·0
		6	0		18·82	517·0	47·9	843·3	48·0
		8	0		20·13	517·5	47·8	842·8	48·0
		10	0		17·24	513·6	47·9	839·3	48·0
		18	0	25	19·60	517·3	48·9	826·5	49·1
		20	0		19·81	517·9	49·4	829·3	49·5
		22	0		20·48	514·6	49·8	833·3	49·9
		23	0		21·05	513·7	49·9	834·2	50·0
Dec.	15	0	0		22·08	513·8	49·9	833·9	50·1
		2	0		22·40	516·6	49·9	834·3	50·0
		4	0		21·81	516·6	49·6	846·9	49·6
		6	0		21·01	514·8	49·0	841·0	49·1
		8	0		20·03	515·4	48·6	839·0	48·6
		10	0		19·31	514·8	48·0	839·3	48·0

DECLINATION. Torsion removed, circle reading,—Dec. 5d 3h, 113½°, 108°*; 14d 3h, 115°.
BIFILAR. k=0·0001300. BALANCE. k=0·000014 approximately.

---

* Dec. 5d 3h. After removing the torsion from the suspension thread of the Declinometer, the magnet, being too near the copper ring, was wound up a little, and the torsion again removed as above.

Dec. 7d 19h. A mistake in the time of an hour was made this morning, which was not discovered till 8h 40m, when an observation was made.

Dec. 14d 1h. Removed the inner box from the Bifilar Magnetometer for comparisons of thermometers. See *Introduction*.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Dec. 15	18	0	25	19·61	517·8	44·6	832·3	44·2
	20	0		19·89	519·2	44·0	834·5	43·6
	22	0		20·05	515·9	43·4	839·0	43·0
	23	0		20·97	515·4	43·2	835·3	43·0
Dec. 16	0	0		22·33	515·2	43·0	836·2	43·0
	2	0		22·58	516·9	43·0	835·6	43·4
	4	0		20·52	518·0	43·3	837·9	43·5
	6	0		20·17	517·8	43·2	838·9	43·4
	8	0		19·96	516·8	42·9	838·8	43·0
	10	0		19·87	517·4	42·7	841·5	42·9
Dec. 17	18	0	25	20·07	520·4	45·6	819·3	45·7
	20	0		19·60	510·8	45·3	823·1	45·5
	22	0		19·44	517·7	45·1	827·3	45·4
	23	0		20·50	516·4	45·1	827·2	45·5
Dec. 18	0	0		20·70	517·6	45·0	828·8	45·5
	2	0		21·97	515·9	45·3	833·9	45·7
	4	0		20·94	517·5	45·7	839·8	46·0
	6	0		20·23	512·2	45·7	846·1	46·0
	8	0		16·84	510·8	45·5	856·7	45·8
	10	0		16·87	516·7	45·3	848·3	45·5
	18	0	25	17·41	519·1	44·5	820·9	44·9
	20	0		18·21	517·9	44·4	825·2	44·7
	22	0		17·86	519·5	44·3	827·3	44·6
	23	0		18·55	520·0	44·3	820·3	44·6
Dec. 19	0	0		18·46	518·0	44·2	828·9	44·7
	2	0		21·39	520·0	44·3	832·6	44·7
	4	0		21·10	518·0	44·2	837·2	44·7
	6	9		19·89	518·6	44·1	832·9	44·6
	8	0		17·91	518·9	44·1	834·8	44·6
	10	0		17·41	517·4	44·0	837·1	44·5
	18	0	25	18·55	519·4	44·6	826·1	45·0
	20	0		18·52	517·4	44·7	825·3	45·1
	22	0		19·63	518·4	44·8	819·7	45·2
	23	0		21·88	518·3	44·8	817·9	45·3
Dec. 20	0	0		21·42	519·0	44·9	823·7	45·4
	2	0		22·94	514·4	45·1	833·3	45·6
	4	0		21·24	514·0	45·9	856·5	46·6
	6	0		19·80	513·6	48·0	843·6	49·0
	8	0		18·55	517·3	51·4	840·5	53·5
	10	0		17·27	516·0	52·7	839·8	54·7
	18	0	25	18·53	520·4	57·0	824·6	59·3
	20	0		18·41	518·7	57·0	831·1	59·5
	22	0		17·27	516·2	57·0	834·5	59·2
	23	0		18·35	514·9	56·4	836·7	58·4
Dec. 21	0	0		19·22	513·7	56·1	843·5	58·5
	2	0		20·88	517·7	56·4	840·7	58·6
	4	0		20·43	518·9	57·0	841·3	59·0
	6	0		20·63	516·5	56·3	841·2	58·2
	8	0		20·21	515·3	55·4	835·4	57·0
	10	0		8·55	522·1	54·6	820·7	55·7
	18	0	25	18·70	518·9	50·3	829·0	50·5
	20	35		17·54	518·4	49·6	828·4	49·6
	22	0		......	......	......	......	......
	23	6		18·43	518·5	49·0	832·9	49·1
Dec. 22	0	0		19·12	517·9	48·9	836·8	49·0
Dec. 22	2	0	25	20·10	519·7	49·0	839·8	49·4
	4	0		18·63	520·3	49·3	841·5	49·8
	6	0		18·08	520·2	49·9	836·2	50·3
	8	0		17·59	516·6	50·1	834·8	50·5
	10	0		16·91	516·7	50·3	831·8	50·6
	18	0	25	17·74	521·1	49·7	827·4	49·9
	20	0		17·24	520·6	49·6	826·3	49·7
	22	0		17·54	514·9	49·3	827·8	49·5
	23	0		18·01	515·7	49·2	825·5	49·4
Dec. 23	0	0		19·26	518·1	49·1	827·5	49·3
	2	0		20·20	519·1	49·1	828·8	49·4
	4	0		18·87	520·0	49·1	838·3	49·5
	6	0		18·60	517·4	49·2	837·1	49·5
	8	0		18·33	520·3	49·4	837·3	49·7
	10	0		16·84	517·8	49·7	836·5	49·9
Dec. 24	18	0	25	17·49	522·3	49·6	815·7	49·5
	20	0		17·31	524·7	49·5	816·1	49·5
	22	0		17·36	520·7	49·4	817·5	49·5
	23	0		18·68	514·9	49·4	822·4	49·6
Dec. 25	0	0		21·21	517·7	49·4	823·9	49·6
	2	0		20·75	518·9	49·6	828·0	49·8
	4	0		19·56	520·0	49·8	829·2	50·0
	6	0		18·12	517·7	49·9	832·9	50·0
	8	0		18·01	517·3	49·7	832·5	49·8
	10	0		16·60	517·0	49·1	831·2	49·5
	18	0	25	19·00	519·6	48·0	830·0	48·1
	20	0		17·18	521·3	47·9	827·9	48·0
	22	0		17·85	515·7	47·8	833·1	47·8
	23	0		19·46	514·6	47·7	827·9	47·7
Dec. 26	0	0		20·70	514·4	47·7	836·0	48·0
	2	0		22·47	518·8	48·0	830·5	48·5
	4	0		19·91	515·8	48·4	839·3	48·7
	6	0		19·13	517·8	48·4	836·4	48·7
	8	0		17·88	517·8	48·1	834·2	48·5
	10	0		17·41	518·2	47·8	831·2	48·0
	18	0	25	16·38	521·2	46·7	822·5	46·8
	20	0		17·83	520·8	46·6	823·0	46·7
	22	0		19·76	516·8	46·4	823·0	46·5
	23	0		21·24	510·9	46·4	829·4	46·5
Dec. 27	0	0		22·65	513·5	46·4	830·1	46·5
	2	0		21·21	517·0	46·4	827·7	46·8
	4	0		19·94	518·7	46·7	840·5	47·0
	6	0		20·81	503·1	46·7	876·4	46·9
	8	0		17·92	513·6	46·7	885·1	47·2
	10	0		17·04	514·3	46·2	858·7	46·5
	18	0	25	15·14	523·6	44·7	824·1	44·8
	20	0		17·44	522·3	44·4	828·9	44·6
	22	0		24·60	511·7	44·1	834·7	44·4
	23	0		23·07	516·5	44·1	827·5	44·3
Dec. 28	0	0		23·07	511·9	44·0	839·6	44·4
	2	0		23·32	506·0	44·6	866·3	45·1
	4	0		21·41	515·3	45·3	878·0	45·9
	6	0		20·57	511·1	45·6	867·8	46·0
	8	0		17·20	514·4	45·7	862·6	46·0
	10	0		17·11	511·0	45·7	851·7	46·0

DECLINATION. Torsion removed, circle reading,—Dec. 17^d 23^h, 122½°.

BIFILAR. k=0·0001300. BALANCE. k=0·000014 approximately.

Dec. 18^d 0^h—2^h. Magnet with short scale in the Declinometer.

Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.		Göttingen Mean Time of Declination Observation.			DECLINATION.		BIFILAR.		BALANCE.	
					Corrected.	Thermometer.	Corrected.	Thermometer.						Corrected.	Thermometer.	Corrected.	Thermometer.
d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°	d.	h.	m.	°	′	Sc. Div.	°	Mic. Div.	°
Dec. 28	18	0	25	18·41	517·1	45·3	830·8	45·7	Dec. 29	18	0	25	18·43	519·2	46·3	823·1	46·5
	20	0		18·06	517·5	45·2	833·0	45·7		20	0		18·25	518·1	46·0	824·8	46·4
	22	0		17·78	515·7	45·3	835·4	45·7		22	0		19·89	512·5	46·0	835·8	46·3
	23	0		18·55	512·7	45·3	835·0	45·8		23	0		17·18	516·7	46·0	836·9	46·3
Dec. 29	0	0		18·93	513·7	45·3	837·5	45·9	Dec. 30	0	0		19·17	513·6	46·0	833·8	46·4
	2	0		20·99	515·8	45·8	833·8	46·3		2	0		21·21	511·9	46·2	844·1	46·7
	4	0		19·89	514·5	46·7	838·2	47·0		4	0		18·82	517·6	46·3	841·3	46·8
	6	0		19·73	516·5	46·9	835·5	47·2		6	0		17·64	515·5	46·3	839·3	46·5
	8	0		19·15	512·8	46·9	842·0	47·2		8	0		17·92	507·2	46·0	855·3	46·2
	10	0		12·50	508·6	46·8	837·9	47·0		10	0		15·22	514·2	45·8	849·8	46·0

DECLINATION. Torsion removed, circle reading,—Jan. 1^d 3^h, 1844, 120⅓°.

BIFILAR. $k=0·0001300$. BALANCE. $k=0·000014$ approximately.

TERM-DAY OBSERVATIONS

OF

MAGNETOMETERS.

MAKERSTOUN OBSERVATORY,

1843.

Göttingen Mean Time of Declination Observation	JANUARY 18, 19.											
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		10^h.			14^h.			18^h.			22^h.	
0	25 27·36	533·5	781·8	25 27·85	557·2	753·5	25 27·81	538·5	755·8	25 27·78	532·5	763·3
5	27·29	533·6	781·3	27·58	537·2	753·9	27·71	538·4	754·8	28·08	532·1	764·2
10	26·79	533·2	781.7	27·13	537·3	754·6	27·73	538·0	754·8	27·80	532·6	761·6
15	26·69	533·7	779·7	26·94	538·1	754·6	27·65	538·2	756·4	28·00	532·3	762·0
20	26·66	534·2	779·1	27·17	537·5	755·4	28·05	537·9	757·9	27·58	529·5	761·9
25	26·75	533·9	776·0	27·29	537·5	756·4	28·21	537·4	758·6	27·71	530·3	762·5
30	26·80	534·5	775·4	27·34	538·3	755·6	28·34	537·1	759·6	28·17	529·8	762·1
35	27·29	534·5	774·4	27·56	538·7	756·2	28·14	537·4	760·1	28·25	529·8	764·8
40	26·91	534·8	773·6	27·78	537·9	756·7	28·27	537·3	760·6	28·17	529·5	762·2
45	26·75	534·5	773·1	27·43	537·9	757·1	27·96	537·9	761·2	27·93	529·4	762·5
50	26·28	534·3	772·3	27·46	537·4	758·2	27·93	537·6	760·5	27·93	529·4	763·8
55	26·48	534·3	772·8	27·34	538·2	757·4	27·40	538·6	758·2	28·15	530·4	764·3
		11^h.			15^h.			19^h.			23^h.	
0	25 26·75	534·0	773·2	25 27·78	538·4	758·2	25 27·73	538·5	759·5	25 28·62	528·9	764·1
5	26·86	532·2	772·6	28·10	537·7	758·9	27·67	537·8	759·6	28·88	530·5	764·6
10	25·31	532·6	769·9	28·50	537·3	759·5	27·83	537·5	757·2	28·88	528·9	768·8
15	22·99	533·1	769·2	28·42	537·5	759·4	27·80	537·7	756·4	28·34	527·8	768·7
20	21·55	535·4	768·2	28·42	539·2	759·0	27·83	538·0	755·8	27·98	531·4	769·5
25	20·23	539·2	764·8	28·50	539·4	758·4	27·49	535·9	757·1	28·81	530·5	770·6
30	18·68	543·3	762·6	28·82	538·8	758·0	27·34	536·7	757·6	28·89	530·1	771·1
35	19·10	546·6	762·7	28·27	537·8	759·0	27·49	537·7	755·8	29·38	527·6	772·9
40	20·61	544·7	762·5	28·12	537·3	758·9	27·46	538·1	752·8	29·17	529·2	772·1
45	21·39	541·4	763·4	27·67	537·0	758·8	27·74	537·8	751·1	29·41	529·3	771·7
50	22·03	537·6	762·4	27·33	536·0	758·5	27·74	537·4	750·5	29·21	528·7	772·2
55	22·62	537·3	762·8	27·09	537·4	759·2	27·98	536·4	749·2	29·68	529·3	772·0
		12^h.			16^h.			20^h.			0^h.	
0	25 23·29	536·4	762·1	25 28·08	538·8	759·3	25 27·98	536·2	747·7	25 29·83	529·3	771·8
5	24·00	534·8	762·6	28·00	538·8	758·8	27·96	536·0	747·6	30·05	529·4	773·4
10	24·06	532·8	762·4	28·44	538·3	759·4	28·07	536·0	750·3	30·13	529·2	772·8
15	23·86	534·3	761·5	28·52	538·1	758·8	28·15	536·1	748·2	29·95	528·8	773·5
20	24·30	536·8	760·8	28·48	538·4	756·6	28·07	536·0	749·1	29·88	529·0	774·0
25	24·99	537·6	758·7	28·57	538·7	756·6	28·00	536·7	750·4	30·25	528·9	775·1
30	25·41	536·4	758·7	28·28	538·8	755·3	28·17	535·9	755·2	30·63	529·9	774·7
35	25·41	536·6	758·7	28·41	538·7	755·8	27·68	536·0	756·6	30·69	529·2	776·9
40	25·59	536·1	758·5	28·20	538·8	755·4	27·76	536·0	760·4	30·68	529·1	776·6
45	25·95	536·1	758·9	28·01	538·3	754·7	27·78	535·8	758·8	30·42	529·3	776·4
50	25·95	537·3	757·9	28·34	537·8	755·3	27·67	536·4	759·3	30·53	529·7	776·0
55	26·10	536·4	757·5	28·64	537·7	757·2	27·80	536·4	761·1	30·71	531·0	776·2
		13^h.			17^h.			21^h.			1^h.	
0	25 26·26	536·7	758·3	25 28·89	537·3	756·6	25 27·98	535·7	759·4	25 31·19	530·3	776·8
5	26·30	535·9	758·1	28·75	537·0	756·4	28·01	535·9	759·8	31·19	530·1	777·3
10	26·05	536·0	756·5	28·34	537·3	756·9	27·93	535·4	759·7	31·32	529·6	776·7
15	25·95	535·4	756·4	28·03	537·2	756·5	27·71	535·1	759·1	31·53	530·0	777·2
20	25·73	535·1	756·5	28·67	537·7	757·6	27·94	534·7	759·3	32·20	530·8	776·4
25	25·95	534·4	756·9	29·65	537·9	757·3	27·96	534·3	763·0	32·27	531·2	775·2
30	25·95	534·4	755·7	28·89	537·4	755·5	27·87	534·1	762·0	31·99	530·6	775·8
35	25·95	535·3	756·1	28·32	537·6	755·3	27·78	533·4	761·8	31·99	531·3	774·5
40	26·22	536·3	756·5	27·98	538·0	754·9	27·49	533·9	761·7	32·20	531·9	774·4
45	27·29	536·7	756·9	27·90	538·2	757·4	27·53	532·2	763·8	32·05	530·4	776·4
50	27·90	537·0	755·9	27·83	538·2	756·5	27·26	530·9	762·6	31·66	530·6	777·0
55	27·96	537·8	755·0	27·83	538·2	756·4	27·40	533·0	762·2	31·66	531·4	776·0

HOUR,	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1
BIFILAR THERMOMETER,	56·8	57·7	58·6	59·7	60·4	60·9	61.4	61·3	60·8	60·2	59·5	59·0	59·3	58.8	58·3	58·6
BALANCE THERMOMETER,	58·2	58·8	59·5	60·4	61·2	61·8	62·2	62·2	61·8	62·2	62·0	61·6	61·0	60·2	59·8	60·0
OBSERVER'S INITIAL,	B	B	B	B	D	D	D	D	W	W	W	W	H	H	H	H

BIFILAR. $k=0·0001248$. Observed 2^m after the Declination.
BALANCE. $k=0·000015$ approximately. Observed 3^m after the Declination.

Göttingen Mean Time of Declination Observation.	January 18, 19.						February 24, 25.					
	Declination.	Bifilar Corrected.	Balance Corrected.	Declination.	Bifilar Corrected.	Balance Corrected.	Declination.	Bifilar Corrected.	Balance Corrected.	Declination.	Bifilar Corrected.	Balance Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		2^{h}.			6^{h}.			10^{h}.			14^{h}.	
0	25 31·99	533·3	775·1	25 29·04	540·7	767·9	25 20·16	527·0	783·2	25 20·55	527·1	693·2
5	32·05	532·2	775·1	28·67	541·7	765·4	20·48	526·4	782·9	21·37	528·4	699·4
10	31·86	532·0	775·0	28·62	541·1	766·5	21·07	526·9	782·1	21·98	529·0	705·6
15	31·73	533·7	773·6	29·41	538·9	765·6	21·53	525·2	784·5	22·42	531·5	708·4
20	31·64	534·3	773·4	29·29	540·1	766·0	21·82	523·5	784·5	23·06	532·4	709·8
25	31·35	534·9	773·5	29·02	540·6	764·9	21·91	523·5	785·2	23·70	531·6	712·5
30	31·32	535·4	773·5	29·29	541·0	764·8	22·42	523·1	785·9	23·86	532·6	715·8
35	31·19	536·4	773·5	28·97	540·2	764·8	23·19	522·0	785·6	24·69	533·8	716·1
40	31·19	537·2	773·5	29·24	539·0	765·8	24·08	521·2	785·4	25·14	532·1	718·2
45	30·90	537·6	773·5	29·31	538·2	767·6	20·77	527·1	776·9	25·18	533·7	717·9
50	30·85	539·0	773·5	29·48	537·9	766·9	16·94	527·1	769·9	25·14	534·0	717·3
55	30·85	539·8	773·8	28·08	536·1	767·2	15·12	526·7	764·0	24·25	532·9	721·2
		3^{h}.			7^{h}.			11^{h}.			15^{h}.	
0	25 30·90	540·5	774·5	25 27·83	536·3	767·6	25 15·19	527·6	760·4	25 23·90	533·4	723·4
5	30·83	540·0	774·6	27·17	535·7	767·4	17·05	525·0	759·6	24·10	535·5	724·4
10	30·65	540·6	775·8	27·00	535·5	766·0	19·42	524·8	759·0	25·09	536·3	724·1
15	30·58	541·0	776·3	27·46	536·0	765·8	26·93	534·7	748·9	25·66	536·7	723·4
20	30·18	540·0	777·1	27·33	537·2	765·9	32·10	543·2	737·7	25·14	538·9	720·5
25	30·02	540·4	778·0	27·44	536.9	763·0	36·56	544·3	718·9	24·22	535·1	719·4
30	29·85	540·9	777·1	27·74	536·9	764·9	35·53	534·7	691·1	22·03	536·7	716·9
35	29·91	541·7	778·0	27·83	536·7	762·0	31·07	526·2	670·6	21·91	538·8	718·0
40	29·85	541·9	779·0	27·27	537·0	761·9	25·45	524·3	667·3	21·91	538·7	719·6
45	29·89	542·7	779·4	27·70	537·7	761·3	21·81	525·9	674·0	22·56	535·6	721·5
50	29·85	542·5	780·2	27·88	537·9	760·5	18·86	526·5	679·8	22·85	534·6	723·7
55	29·88	542·3	781·1	27·88	538·0	758·7	16·43	527·6	684·5	24·01	535·0	723·5
		4^{h}.			8^{h}.			12^{h}.			16^{h}.	
0	25 30·00	542·1	780·8	25 27·85	538·0	758·1	25 15·03	526·9	692·5	25 24·50	534·0	724·6
5	29·86	541·4	779·0	28·07	537·9	759·1	18·95	514·5	699·8	25·14	535·2	723·5
10	29·85	541·4	779·5	28·57	537·5	759·4	23·76	505·7	705·8	25·32	536·5	721·7
15	29·62	541·4	781·5	28·48	537·2	758·6	27·29	498·0	706·9	25·07	535·4	719·7
20	29·62	542·4	779·2	28·59	536·8	757·5	32·02	495·2	702·1	24·40	535·6	720·9
25	29·38	542·0	778·8	28·52	535·8	757·1	33·17	502·2	690·6	24·31	536·3	721·7
30	29·58	541·9	778·3	27·94	534·5	756·5	33·13	512·0	673·9	24·80	534·5	723·4
35	29·49	541·7	777·6	27 16	534·9	756·0	30·77	519·5	662·8	24·67	533·2	724·4
40	29·60	542·1	775·7	26·70	534·1	756·1	29·11	528·2	660·4	24·99	532·4	726·4
45	29·38	541·7	776·3	26·33	534·1	756·4	25·90	537·2	659·3	26·22	529·9	728·1
50	29·46	542·2	776·4	26·06	535·2	756·8	24·00	536·7	656·4	27·47	526·8	728·4
55	29·31	541·8	777·5	26·06	534·9	757·6	22·09	540·0	657·3	28·17	525·5	728·4
		5^{h}.			9^{h}.			13^{h}.			17^{h}.	
0	25 29·31	541·5	775·9	25 26·48	534·4	758·4	25 20·99	537·6	654·0	25 29·31	527·0	725·9
5	29·22	541·3	774·4	26·79	534·1	761·6	18·36	535·3	651·5	29·78	530·1	724·0
10	29·26	540·9	776·2	26·96	533·6	761·4	16·80	535·0	650·0	30·39	526·7	723·9
15	29·17	541·2	773·9	26·99	533·8	761·3	14·20	535·0	648·4	31·25	527·0	720·8
20	29·26	539·8	772·4	27·56	534·0	760·9	12·65	537·1	652·8	31·79	528·6	717·1
25	29·31	541·1	769·8	27·38	532·7	760·5	12·70	538·6	656·9	31·99	527·5	715·3
30	28·70	542·2	769·4	26·15	532·2	760·7	14·70	534·1	659·4	31·32	529·4	712·0
35	28·59	542·0	769·1	24·72	533·9	760·5	16·33	532·6	663·6	31·12	531·8	710·9
40	29·04	541·8	767·5	24·55	533·7	762·8	17·91	529·4	668·3	30·65	534·3	708·6
45	28·95	541·4	771·1	24·94	535·0	763·8	19·36	526·5	675·2	30·58	536·9	706·0
50	29·01	540·1	768·5	24·80	533·8	765·5	19·98	524·2	680·8	29·38	538·7	703·5
55	29·11	540·7	767·4	24·87	533·6	766·1	19·86	526·5	686·2	28·50	539·5	701·1

Hour,	2	3	4	5	6	7	8	9	10	10	11	12	13	14	15	16	17
Bifilar Thermometer,	58·3	58·3	59·0	59·8	60·3	60·6	60·3	59·7	59·2	52·7	52·3	52·0	53·1	53·1	53·0	53·0	53·0
Balance Thermometer,	60·0	59·8	60·3	61·0	61.5	62·0	61·5	60·9	60·5	54·2	54·1	54·0	55·3	55·0	55·2	55·4	55·5
Observer's Initial,	B	B	H	H	W	W	D	D		D	D	D	D	W	W	W	W

Bifilar. k=0·0001205. Observed 2^{m} after the Declination.
Balance. k=0·000015 approximately. Observed 3^{m} after the Declination.

February Term. For observations before and after this Term, see *Extra Observations.*

Göttingen Mean Time of Declination Observation.	FEBRUARY 24, 25.											
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		18h.			22h.			2h.			6h.	
0	25 27·85	539·2	701·2	25 26·35	529·2	743·4	25 28·70	535·7	748·6	25 27·19	534·5	750·1
5	27·70	537·2	695·5	25·88	530·3	743·7	28·70	536·1	747·8	27·27	535·8	749·3
10	26·96	536·2	703·6	26·28	530·1	744·0	28·64	536·2	746·4	27·16	536·3	751·6
15	26·08	537·4	703·5	26·42	530·5	744·0	28·57	535·6	746·1	27·06	536·4	753·1
20	26·22	537·1	708·3	26·62	530·0	745·5	28·70	537·3	745·2	27·22	535·4	753·6
25	26·28	537·0	705·0	26·42	530·2	743·9	28·70	536·1	745·6	27·19	536·3	750·2
30	26·08	535·3	710·0	26·82	528·9	745·4	28·57	536·1	745·5	27·07	534·8	753·6
35	25·95	535·7	712·5	26·08	529·6	745·7	28·64	537·0	745·4	26·69	535·1	752·5
40	25·95	535·3	714·1	26·69	526·5	746·1	28·65	535·7	743·9	26·75	535·7	752·5
45	25·75	537·1	716·3	25·75	532·5	746·5	28·45	534·6	745·4	26·75	535·7	751·4
50	26·28	536·1	717·8	26·48	528·7	748·2	28·50	535·3	744·8	26·67	535·8	749·6
55	26·08	538·0	717·8	26·67	529·9	747·8	28·50	535·3	745·1	26·57	535·1	749·8
		19h.			23h.			3h.			7h.	
0	25 26·43	538·4	716·4	25 26·72	530·2	748·9	25 28·39	535·1	743·8	25 26·62	535·8	749·6
5	26·37	538·3	719·1	27·06	528·9	749·8	28·10	534·9	743·6	26·52	536·3	750·1
10	26·35	537·6	723·7	27·09	530·0	746·0	28·03	536·1	744·3	26·25	536·7	750·5
15	26·25	536·4	724·1	27·63	529·7	746·2	27·93	535·3	743·5	26·05	537·7	749·1
20	25·95	536·3	725·4	27·70	529·3	746·1	27·94	535·7	743·8	26·39	537·3	749·4
25	25·63	536·1	725·5	27·49	529·0	745·2	27·83	534·9	745·3	25·95	537·1	750·0
30	25·78	535·9	727·5	27·70	529·4	745·7	27·93	535·9	747·0	26·37	538·2	750·5
35	25·65	534·8	728·1	27·56	529·8	745·6	27·83	535·3	752·6	26·50	539·5	748·9
40	25·31	534·7	731·4	27·56	530·2	745·4	27·85	535·5	748·1	26·39	538·1	749·3
45	25·48	534·8	730·5	27·96	530·0	745·3	27·80	535·8	751·7	26·55	536·7	749·8
50	25·45	535·1	733·7	27·56	527·9	746·4	27·96	536·0	747·0	26·39	537·5	750·1
55	25·81	534·4	733·6	27·29	528·5	746·0	27·80	535·7	747·1	26·28	536·9	750·5
		20h.			0h.			4h.			8h.	
0	25 25·58	534·5	734·2	25 28·03	528·1	……	25 27·70	536·9	748·5	25 25·95	536·0	747·8
5	25·95	534·2	733·9	28·54	527·3	747·5	27·71	536·1	749·1	25·95	536·0	748·5
10	25·48	534·3	734·7	28·58	526·0	747·9	27·44	537·9	748·7	25·95	536·5	748·9
15	25·63	533·5	734·8	28·64	527·6	747·1	27·73	537·3	750·4	25·16	538·1	750·9
20	25·32	534·2	734·8	27·96	529·6	747·0	27·22	533·7	749·8	25·98	533·9	752·7
25	25·37	533·9	734·9	29·04	531·3	746·9	27·41	537·4	749·0	25·75	535·4	752·5
30	25·16	534·6	735·5	28·97	531·0	746·8	27·70	538·9	750·5	24·87	534·9	753·0
35	25·21	534·1	736·9	28·74	530·0	746·8	27·20	536·8	752·6	25·81	535·7	752·4
40	25·54	535·7	740·2	28·27	530·3	746·7	27·11	536·2	752·7	25·95	538·0	750·2
45	26·35	530·7	740·9	28·67	531·8	745·6	27·11	536·3	753·0	25·95	538·8	749·8
50	25·58	532·5	742·8	28·70	530·9	746·7	26·82	535·8	753·0	25·95	539·2	750·2
55	25·81	531·8	742·1	28·23	531·8	747·1	26·77	535·5	753·8	25·95	539·4	750·6
		21h.			1h.			5h.			9h.	
0	25 25·36	531·4	743·8	25 28·54	533·0	746·7	25 26·82	535·3	752·7	25 25·95	541·4	751·0
5	25·75	530·7	741·4	28·64	533·2	748·3	26·94	534·7	753·1	25·95	539·3	751·2
10	25·14	531·3	744·0	28·70	533·0	748·4	27·06	534·9	752·8	25·95	539·0	748·3
15	25·68	531·1	742·3	28·70	533·3	748·5	26·69	532·7	752·0	24·20	538·7	749·6
20	25·54	530·7	742·5	28·64	534·2	748·6	26·66	531·9	752·4	23·76	537·6	750·2
25	25·02	530·8	743·3	28·37	533·0	749·9	27·44	535·1	751·8	24·13	536·5	751·4
30	26·42	529·1	743·8	28·54	532·6	749·7	27·80	537·3	749·2	24·47	536·1	752·6
35	24·99	531·0	743·6	28·70	534·2	750·5	27·22	533·5	750·0	24·67	536·1	752·8
40	25·95	530·3	743·4	28·64	535·2	748·8	27·24	534·5	750·1	25·14	536·1	751·5
45	25·66	529·6	744·6	28·64	536·3	749·1	27·27	535·2	750·8	25·27	536·0	751·6
50	25·83	529·8	745·8	28·77	536·4	748·5	26·97	534·8	749·8	25·21	535·7	751·4
55	25·56	529·9	744·9	28·70	536·1	748·6	27·02	534·7	750·4	23·19	535·9	748·1

HOUR,	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10
BIFILAR THERMOMETER,	53·4	53·9	53·8	53·2	53·0	53·0	52·9	52·8	53·1	52·9	52·4	52·1	51·3	51·5	52·2	52·8	53·0
BALANCE THERMOMETER,	55·8	55·8	55·8	55·2	55·0	55·1	54·9	54·8	54·9	54·5	54·0	53·8	53·0	53·1	53·8	54·4	54·7
OBSERVER'S INITIAL,	H	H	H	H	B	B	B	B	H	H	W	W	D	D	B	B	

BIFILAR. $k=0·0001248$. Observed 2m after the Declination.
BALANCE. $k=0·000015$ approximately. Observed 3m after the Declination.

February Term. For observations before and after this Term, see *Extra Observations.*

Göttingen Mean Time of Declination Observation.	MARCH 22, 23.											
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		10h.			14h.			18h.			22h.	
0	25 20·87	548·0	724·4	25 22·03	545·9	620·7	25 23·16	543·1	682·1	25 24·04	530·6	690·8
5	21·29	544·8	725·7	20·82	541·0	624·7	22·83	545·7	681·3	23·97	532·9	689·8
10	21·88	544·2	723·8	20·07	539·3	628·1	25·75	539·6	685·9	23·59	532·8	689·8
15	22·52	542·8	722·1	19·61	538·5	631·9	24·71	542·8	685·2	24·15	533·4	689·0
20	23·36	542·4	721·7	18·97	536·3	635·5	23·90	544·2	683·1	23·56	531·0	688·7
25	24·15	540·5	721·2	18·92	534·7	638·9	23·41	544·2	683·4	24·24	533·7	688·7
30	24·03	539·5	720·8	18·87	533·4	640·8	23·24	543·3	684·5	24·44	534·4	688·2
35	23·81	540·2	717·7	18·25	533·6	640·8	23·03	543·5	684·1	24·15	534·3	688·3
40	23·64	541·4	715·6	17·17	535·0	640·5	22·67	542·3	685·1	24·47	533·6	688·1
45	23·29	541·3	714·8	16·44	536·4	641·7	23·12	541·9	685·3	24·01	533·2	688·0
50	23·26	540·0	712·8	15·70	535·7	642·5	23·04	542·1	685·3	24·48	533·9	688·0
55	23·32	538·9	711·9	15·79	536·7	642·1	23·53	540·9	687·5	24·98	533·9	688·0
		11h.			15h.			19h.			23h.	
0	25 23·17	538·9	709·9	25 15·69	535·0	641·9	25 23·97	540·1	689·6	25 25·14	534·2	688·0
5	23·29	540·8	709·2	16·92	533·3	647·8	23·93	538·8	689·4	25·68	533·6	688·0
10	23·36	539·9	709·7	19·00	530·7	654·1	23·93	538·0	690·1	25·95	532·8	688·0
15	23·44	539·7	710·9	20·43	528·4	654·9	23·39	538·2	689·7	25·95	533·2	688·0
20	23·53	538·4	711·2	20·50	529·4	658·6	23·56	538·5	690·0	26·01	532·2	689·3
25	23·50	538·3	711·6	21·73	530·4	659·5	23·30	538·9	689·2	26·48	532·9	689·3
30	23·97	539·1	710·2	21·91	531·6	659·2	23·19	540·9	689·6	26·80	531·9	689·3
35	24·33	548·5	704·5	22·65	531·6	660·7	23·86	540·4	690·0	27·13	531·4	689·3
40	24·65	555·7	699·0	22·90	533·6	664·0	23·76	540·1	689·8	27·60	533·3	689·3
45	24·40	557·8	694·6	23·23	535·1	661·9	23·93	542·3	689·5	27·80	531·6	689·3
50	23·12	553·5	693·8	23·43	537·1	662·3	23·79	542·6	689·3	27·88	531·1	689·3
55	21·26	552·9	690·6	23·29	537·1	664·0	24·13	543·1	689·0	27·61	531·9	689·3
		12h.			16h.			20h.			0h.	
0	25 20·40	551·6	688·9	25 23·12	536·4	663·9	25 24·60	544·2	690·0	25 28·07	531·3	689·3
5	20·40	546·2	688·8	22·74	538·8	663·0	24·57	542·6	690·7	28·74	533·7	689·3
10	19·96	541·1	690·5	22·92	538·9	665·4	24·87	543·9	690·5	28·82	530·9	686·9
15	19·93	537·1	693·6	23·29	539·6	666·2	24·53	540·7	691·3	29·35	529·7	687·3
20	19·91	536·2	693·9	23·39	540·4	666·1	23·44	542·2	691·4	29·76	530·4	687·3
25	20·28	535·6	697·6	23·97	538·8	669·4	24·53	538·4	694·4	29·65	532·0	687·3
30	20·88	533·8	699·1	23·50	539·4	668·3	24·47	536·6	696·4	30·48	533·8	687·3
35	21·07	533·7	700·3	23·54	538·9	668·2	23·70	536·0	696·4	32·31	538·1	686·9
40	20·97	534·4	699·9	23·53	540·0	669·3	23·36	535·9	698·3	31·99	533·2	687·3
45	21·48	533·9	699·9	23·83	540·8	671·6	23·39	533·1	697·6	31·68	532·8	687·3
50	21·66	534·4	698·2	24·15	539·0	670·0	21·91	538·5	696·0	32·25	533·5	687·8
55	25·05	530·1	698·5	23·48	538·0	671·4	23·39	540·0	695·3	31·64	531·4	689·1
		13h.			17h.			21h.			1h.	
0	25 26·99	527·2	697·0	25 22·69	539·1	671·0	25 23·54	542·6	696·3	25 32·20	534·5	689·1
5	26·77	527·7	692·0	22·77	538·2	671·6	24·33	536·4	696·3	33·07	534·5	694·0
10	30·07	534·7	687·1	23·03	538·9	672·2	22·45	538·6	695·9	32·35	530·9	697·5
15	32·31	545·0	675·9	23·19	538·5	673·6	23·76	536·8	693·8	31·63	529·3	696·0
20	32·02	551·3	662·6	23·26	538·2	673·7	24·42	537·1	693·0	31·84	530·2	695·4
25	31·25	559·3	652·5	23·44	537·7	677·5	24·98	537·9	694·3	31·68	531·5	695·8
30	30·05	562·1	642·0	23·44	535·4	680·3	25·27	534·8	693·3	31·66	531·3	696·3
35	29·29	562·8	634·7	22·42	537·9	678·7	24·48	534·9	694·5	31·32	530·0	695·5
40	29·14	558·2	630·4	23·44	539·6	679·9	24·71	533·8	693·4	31·30	529·8	696·0
45	28·00	558·3	625·5	25·21	535·6	682·2	24·44	533·2	692·3	31·38	529·7	696·2
50	25·81	555·9	619·9	24·40	534·9	684·0	24·60	532·7	693·4	31·43	528·4	697·3
55	23·44	551·0	613·7	21·73	540·1	682·7	23·97	531·0	690·6	31·43	531·2	697·0

HOUR, ...	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1
BIFILAR THERMOMETER, . . .	56·0	54·0	54·0	54·0	53·9	53·9	53·8	53·5	53·3	53·3	53·0	52·5	52·2	52·3	52·3	52·5
BALANCE THERMOMETER, . .	56·0	54·2	54·8	55·5	54·8	54·3	54·0	54 0	53·8	53·6	53·2	53·0	52·5	52·5	52·5	52·5
OBSERVER'S INITIAL, ...	W	W	W	W	H	H	H	H	B	B	B	B	D	D	D	D

BIFILAR. Observed 2m after the Declination. $k=0·0001248$.
BALANCE. Observed 3m after the Declination. $k=0·000015$ approximately.

Göttingen Mean Time of Declination Observation.	MARCH 22, 23.						APRIL, 19, 20.					
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		2^{h}.			6^{h}.			10^{h}.			14^{h}.	
0	25 31·83	533·2	695·9	25 24·87	535·6	724·6	25 23·09	543·8	683·9	25 20·57	539·7	685·3
5	31·99	535·6	695·3	24·11	530·8	728·0	23·24	543·9	684·2	20·52	539·9	684·7
10	31·71	533·8	696·5	22·15	528·5	730·9	23·10	543·6	691·1	20·57	539·8	684·1
15	31·86	535·0	694·9	21·28	536·9	732·8	23·03	543·8	690·8	20·45	539·7	683·5
20	32·05	537·6	693·4	22·79	533·1	735·9	23·10	543·9	690·1	20·57	539·9	682·9
25	31·93	535·4	694·8	22·49	531·9	739·3	23·03	543·0	691·0	20·70	539·7	682·3
30	32·10	538·7	694·8	18·75	536·8	738·0	22·92	543·6	691·0	20·54	539·0	681·7
35	31·79	535·7	695·7	13·44	542·5	737·2	23·06	544·1	691·7	20·57	538·9	681·2
40	31·77	537·0	696·1	13·17	547·0	739·5	23·06	544·6	692·2	20·57	538·8	682·1
45	31·48	540·9	694·2	15·36	544·7	739·9	22·85	544·7	,,	20·43	538·7	682·5
50	32·20	541·6	695·8	16·84	537·3	740·8	22·80	544·7	692·2	20·27	538·7	681·8
55	31·61	540·2	697·9	16·80	538·8	737·5	22·72	544·3	,,	20·45	538·6	682·2
		3^{h}.			7^{h}.			11^{h}.			15^{h}.	
0	25 31·56	539·8	698·1	25 16·87	530·6	735·4	25 22·62	543·7	692·3	25 20·30	538·4	683·3
5	31·16	539·9	697·7	13·82	547·3	726·0	22·83	544·1	,,	20·57	538·1	683·9
10	30·96	538·1	696·8	13·77	552·0	723·3	22·80	543·9	,,	20·57	538·1	,,
15	30·56	538·1	697·0	15·76	552·4	723·6	22·62	543·1	,,	20·57	539·0	,,
20	30·36	540·0	697·2	17·67	546·3	724·4	22·58	543·0	,,	20·63	539·1	683·9
25	30·39	540·7	697·7	18·86	544·0	724·6	22·67	543·0	,,	20·43	538·0	684·4
30	29·91	538·4	698·9	20·23	539·3	725·2	22·60	542·8	688·0	20·35	537·5	684·8
35	29·91	540·2	698·4	20·57	540·9	721·2	22·58	542·8	,,	20·43	537·9	681·4
40	30·12	540·9	698·6	20·54	539·2	722·3	22·58	542·7	,,	20·10	537·4	,,
45	29·88	541·4	698·8	21·28	538·1	725·3	22·58	542·7	,,	20·03	536·9	678·8
50	29·55	541·8	699·0	22·02	538·9	718·7	……	542·8	687·2	20·10	535·5	,,
55	29·31	542·1	699·7	22·63	539·3	719·0	22·62	542·5	,,	20·43	533·0	,,
		4^{h}.			8^{h}.			12^{h}.			16^{h}.	
0	25 29·01	540·5	701·0	25 23·43	539·3	717·9	25 22·58	542·3	686·9	25 20·30	533·8	681·5
5	29·19	544·8	700·7	24·13	538·5	717·5	22·52	541·8	,,	19·96	534·9	,,
10	29·12	543·0	701·7	24·48	537·7	716·0	22·55	541·4	,,	20·34	536·3	682·7
15	30·53	542·7	699·9	25·14	536·0	716·0	22·47	541·4	,,	21·17	534·1	682·8
20	28·37	540·3	701·3	25·34	536·4	714·6	22·40	541·5	691·1	21·24	534·8	,,
25	27·83	536·7	701·5	25·16	536·8	713·2	22·32	541·5	,,	21·17	534·8	,,
30	27·91	537·2	703·3	25·39	535·2	713·1	22·18	541·0	,,	20·97	535·7	,,
35	27·70	538·3	703·3	25·68	534·7	713·1	22·20	540·5	,,	20·90	535·7	,,
40	27·90	540·8	705·4	25·68	534·9	712·9	22·23	540·6	689·1	20·57	537·4	679·1
45	28·23	539·4	704·9	25·81	535·6	712·9	22·25	540·8	,,	21·10	536·7	679·7
50	27·09	539·4	705·1	25·90	536·0	711·4	22·11	540·8	,,	20·63	535·6	682·4
55	26·97	537·2	704·8	25·86	536·8	710·1	22·23	540·8	,,	21·17	535·4	,,
		5^{h}.			9^{h}.			13^{h}.			17^{h}.	
0	25 27·33	549·6	704·0	25 25·79	537·1	710·3	25 22·11	540·5	687·2	25 21·10	535·6	,,
5	27·41	545·1	712·3	25·95	537·5	709·4	22·08	540·3	686·9	21·17	536·1	,,
10	26·72	538·0	712·6	25·88	537·9	707·9	22·05	540·2	686·5	21·17	535·9	,,
15	26·48	537·0	710·5	25·75	537·8	708·4	22·29	539·7	686·2	20·87	536·9	,,
20	26·28	538·2	711·5	25·46	538·2	708·2	22·13	540·0	,,	20·81	537·0	,,
25	26·32	536·5	714·2	25·18	537·9	706·8	21·95	540·0	,,	20·63	536·9	679·8
30	26·62	538·2	712·4	25·12	538·2	705·1	22·02	540·3	687·8	20·77	537·5	680·8
35	26·55	540·5	711·9	25·18	538·0	704·7	20·70	540·3	,,	20·87	536·6	681·2
40	26·72	545·2	713·3	25·05	538·0	704·2	20·61	540·3	687·1	21·37	534·9	,,
45	27·11	544·9	714·4	24·77	536·9	704·0	20·57	540·2	686·8	21·51	534·6	,,
50	26·15	540·5	714·2	25·02	538·1	703·5	20·95	540·1	686·5	21·44	533·6	,,
55	25·75	541·1	719·0	24·67	537·0	703·3	20·70	539·5	685·6	20·79	534·3	,,

HOUR, ...	2	3	4	5	6	7	8	9	10	10	11	12	13	14	15	16	17
BIFILAR THERMOMETER, .	53·2	54·0	54·4	54·4	54·2	54·4	54·3	54·0	53·7	58·7	58·5	58·0	57·2	56·8	56·0	55·5	54·6
BALANCE THERMOMETER,	53·4	53·9	54·2	54·5	54·5	54·2	54·3	54·3	54·0	58·5	58·5	58·2	58·0	57·5	56·6	56·0	55·4
OBSERVER'S INITIAL, . .	W	W	H	H	B	B	D	D		H	H	H	H	D	B	B	B

BIFILAR. Observed 2^{m} after the Declination. k=0·0001248.
BALANCE. Observed 3^{m} after the Declination. k=0·000015 approximately.

April 19^{d} 13^{h}. When double commas (,,) occur in the column for the Balance Magnetometer, the needle was examined, and no change from the previous observation being appreciable, the Micrometers were not altered. It should be remarked that the permanent observers possess the power of detecting slight changes with more facility than the occasional or Term assistants.

Göttingen Mean Time of Declination Observation.	APRIL 19, 20.											
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		18^h.			22^h.			2^h.			6^h.	
0	25 21·24	533·9	677·7	25 19·71	530·6	……	25 28·81	534·2	669·7	25 22·49	545·5	696·6
5	21·32	533·5	677·0	19·94	529·8	686·7	28·64	533·8	„	21·79	544·5	696·5
10	21·01	533·9	676·3	19·93	529·5	688·2	28·72	534·2	„	21·91	547·3	696·5
15	21·10	535·1	675·6	19·93	526·9	685·8	29·28	533·6	672·6	21·64	546·4	„
20	21·17	535·0	674·9	20·58	528·0	685·3	28·84	534·7	674·5	21·21	545·1	„
25	21·53	535·2	674·2	20·63	528·5	685·4	28·70	533·7	678·6	20·37	545·3	„
30	21·79	535·2	674·2	20·54	528·6	686·8	28·89	531·0	676·0	19·83	545·8	699·9
35	21·98	536·2	673·5	20·81	527·6	687·5	28·07	531·0	„	19·61	547·9	699·8
40	22·38	536·2	672·8	20·13	528·8	687·7	28·17	533·3	„	19·49	549·4	700·6
45	21·89	536·1	„	21·31	527·9	688·3	28·07	533·6	681·9	19·89	549·3	700·5
50	21·66	536·3	„	21·61	526·6	„	27·78	532·7	„	20·57	549·2	„
55	21·31	536·0	„	21·91	526·9	688·8	27·74	533·7	„	21·01	547·6	700·3
		19^h.			23^h.			3^h.			7^h.	
0	25 21·14	535·6	669·8	25 21·75	525·7	686·6	25 27·41	534·3	684·0	25 21·37	549·0	700·3
5	21·10	535·8	672·1	21·91	525·5	687·1	27·26	533·6	685·4	21·15	545·3	„
10	20·38	536·8	671·7	22·80	525·8	687·7	27·06	536·8	„	20·28	543·9	„
15	20·27	536·9	673·6	22·58	526·8	„	26·72	538·0	„	19·70	545·0	„
20	19·86	537·8	673·2	23·16	525·9	687·7	26·69	537·9	„	19·61	546·5	„
25	19·46	538·0	672·8	23·26	524·5	„	26·05	537·4	„	19·36	547·0	„
30	19·22	537·8	672·4	23·61	524·6	687·9	25·85	537·7	„	19·67	546·0	„
35	19·15	538·2	675·7	23·86	524·5	„	26·37	538·0	688·4	20·18	546·8	„
40	18·92	538·8	675·3	24·44	524·2	686·0	25·88	536·9	689·3	20·84	546·1	„
45	18·68	538·0	674·9	25·09	525·3	„	26·25	539·8	„	21·21	544·3	„
50	18·66	537·5	676·5	25·16	524·6	„	25·21	535·6	690·8	21·19	545·7	700·6
55	18·63	538·9	676·1	25·22	525·2	686·0	25·85	539·1	691·6	21·79	544·9	„
		20^h.			0^h.			4^h.			8^h.	
0	25 18·59	538·5	675·7	25 25·52	527·4	684·3	25 25·41	540·6	„	25 21·41	546·3	„
5	18·62	538·4	676·7	26·08	527·3	684·2	25·54	542·0	691·0	21·59	546·5	699·6
10	18·46	538·3	676·7	26·82	525·1	„	25·41	540·6	693·2	21·35	547·3	699·8
15	18·63	538·5	679·6	26·55	523·6	„	25·27	538·2	693·4	……	547·1	697·8
20	18·35	538·0	679·1	26·42	527·9	683·8	25·41	538·6	693·6	20·61	547·5	694·6
25	18·45	537·8	682·5	26·80	526·3	„	25·07	539·2	„	20·63	548·2	694·8
30	18·50	538·1	678·4	27·07	525·2	683·1	24·67	538·9	„	20·54	545·9	694·9
35	18·33	537·8	679·0	26·97	525·0	„	24·67	540·0	„	20·94	544·9	„
40	18·59	537·5	679·0	26·82	523·7	„	24·67	539·4	694·2	20·99	543·7	695·6
45	19·89	539·0	679·0	26·97	524·4	„	24·82	539·8	696·6	20·97	543·1	695·7
50	21·02	538·2	679·0	27·16	526·7	680·5	24·51	540·0	698·2	21·05	543·6	698·7
55	22·25	533·8	681·7	27·04	527·4	„	24·60	540·2	698·2	21·17	543·6	698·5
		21^h.			1^h.			5^h.			9^h.	
0	25 20·77	534·6	681·2	25 27·20	528·9	678·0	25 24·27	539·6	698·2	25 21·24	543·6	698·8
5	21·46	535·7	„	26·53	531·3	675·1	24·27	541·3	„	21·31	543·2	„
10	21·28	532·4	„	27·54	529·6	676·5	23·93	541·5	„	21·37	543·6	„
15	18·79	534·2	682·3	27·41	528·7	674·8	23·91	540·0	„	21·31	544·1	696·8
20	18·86	534·4	„	27·47	531·2	672·6	23·73	540·8	698·6	21·31	545·5	695·4
25	19·10	534·2	681·3	27·80	531·0	„	23·29	540·9	„	21·31	544·9	694·4
30	19·09	533·2	685·0	27·56	526·7	„	23·24	539·7	„	21·35	545·2	„
35	19·22	532·6	„	28·23	527·9	„	23·46	543·7	„	21·31	544·6	„
40	19·63	531·6	„	28·84	529·5	671·6	22·92	543·3	697·4	21·69	544·3	„
45	19·58	529·1	682·1	28·75	530·0	„	23·06	543·7	697·2	21·37	543·8	„
50	19·67	530·4	682·4	28·34	530·4	„	22·92	543·4	697·0	21·42	544·8	„
55	19·34	530·3	680·3	28·54	531·6	„	22·76	542·8	696·8	21·64	544·6	694·8

HOUR, ...	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10
BIFILAR THERMOMETER, .	53·8	52·8	52·2	52·2	52·7	53·8	54·8	55·7	56·1	56·2	56·3	56·3	56·0	55·9	55·6	55·6	55·6
BALANCE THERMOMETER,	54·5	53·4	52·8	52·8	53·0	54·0	54·8	55·4	55·6	56·0	56·0	56·0	55·7	55·6	55·5	55·7	55·9
OBSERVER'S INITIAL, . .	D	D	D	H	W	W	W	W	H	B	B	Var.	D	D	D	W	

BIFILAR. Observed 2^m after the Declination. $k=0·0001248$.
BALANCE. Observed 3^m after the Declination. $k=0·000015$ approximately.

Göttingen Mean Time of Declination Observation.	MAY 26, 27.											
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		10h.			14h.			18h.			22h.	
0	25 17·61	473·2	578·3	25 9·00	491·4	599·0	25 17·04	504·3	649·9	25 20·67	478·5	656·5
5	12·23	482·0	569·1	9·27	492·2	599·0	17·04	504·5	651·5	21·14	479·3	654·0
10	9·40	500·1	577·1	10·29	490·7	600·3	16·95	504·1	652·3	21·34	477·4	„
15	7·24	514·5	589·1	10·88	490·1	606·3	17·20	503·8	654·1	21·49	478·8	653·1
20	7·85	519·0	592·0	11·15	493·5	606·3	16·84	503·0	654·8	21·31	480·3	„
25	9·00	518·6	593·2	11·96	492·9	607·5	16·70	502·6	654·8	23·79	474·6	658·0
30	10·72	522·3	600·2	12·94	493·8	607·5	16·78	502·7	655·8	23·81	472·7	657·7
35	13·51	520·1	610·2	13·46	496·4	613·7	17·39	501·3	656·4	23·21	476·5	653·5
40	15·83	512·5	621·5	15·09	497·0	616·2	16·91	501·1	„	23·41	477·8	„
45	17·74	506·9	628·4	15·43	499·8	617·7	16·31	500·0	658·0	23·64	477·8	646·7
50	18·73	498·4	634·2	15·90	502·8	622·1	16·58	500·3	658·6	23·91	478·3	„
55	18·65	495·6	639·2	16·53	505·2	„	17·02	499·6	„	24·20	479·9	„
		11h.			15h.			19h.			23h.	
0	25 18·41	500·3	638·2	25 17·07	503·7	„	25 17·79	498·2	658·8	25 24·60	479·7	647·5
5	18·38	506·0	640·1	16·70	507·5	„	17·02	497·3	660·9	24·77	481·4	„
10	19·12	510·9	638·5	15·86	511·4	„	16·67	497·3	„	25·29	481·5	645·0
15	19·93	515·0	638·6	15·84	512·1	619·8	16·46	497·1	„	25·38	483·4	„
20	20·41	516·6	637·8	15·86	511·0	„	16·53	496·6	„	25·61	485·3	643·2
25	21·01	517·2	636·0	15·56	510·1	„	16·91	496·1	„	25·96	485·7	642·2
30	19·96	515·1	634·3	15·14	509·2	„	17·14	495·7	„	26·42	486·4	641·4
35	19·89	515·6	631·9	15·19	509·7	„	16·91	494·4	660·8	26·43	486·9	„
40	20·03	514·3	631·8	15·30	509·2	„	16·48	493·4	„	26·77	484·4	„
45	20·20	511·0	631·6	15·56	508·7	621·7	16·55	493·3	659·7	27·17	485·8	„
50	18·99	512·2	629·7	15·86	507·2	623·8	16·57	492·6	„	27·33	485·4	„
55	18·13	514·4	628·8	15·43	506·9	„	16·60	491·0	„	27·54	486·8	„
		12h.			16h.			20h.			0h.	
0	25 17·98	512·8	629·2	25 15·29	508·5	„	25 16·41	490·8	661·1	25 27·76	489·1	641·3
5	17·98	509·8	629·5	15·66	511·0	628·6	16·57	490·1	„	27·90	490·6	„
10	17·91	510·0	627·7	17·83	510·1	„	16·71	489·2	663·5	28·18	491·7	„
15	17·45	514·9	621·7	18·41	509·1	631·1	16·98	488·2	664·3	28·34	492·6	„
20	15·93	519·7	613·6	18·41	509·0	631·9	17·29	486·6	665·7	28·44	492·0	637·3
25	15·09	514·1	610·1	17·88	509·3	635·8	17·14	486·6	666·6	28·50	493·4	„
30	13·17	509·6	606·3	18·28	509·9	„	16·97	486·7	„	28·70	494·3	635·2
35	12·72	499·4	607·8	18·25	508·7	640·6	17·07	486·0	668·4	28·88	495·9	„
40	10·72	502·1	605·8	18·03	508·6	641·2	17·91	485·9	671·2	29·11	495·7	„
45	11·73	500·6	604·4	17·98	508·1	643·1	17·88	482·7	„	29·15	495·7	633·7
50	12·50	495·0	604·6	18·01	508·6	„	17·14	483·8	668·2	29·17	497·0	„
55	11·96	495·1	599·0	18·55	506·5	644·8	17·54	483·2	„	29·31	497·0	„
		13h.			17h.			21h.			1h.	
0	25 11·69	493·3	594·1	25 17·78	506·5	645·3	25 17·71	482·6	668·4	25 29·29	497·2	633·2
5	10·55	490·1	593·1	17·98	507·3	„	17·83	482·9	668·1	29·31	498·0	„
10	9·87	486·0	„	18·01	507·3	„	18·21	481·8	„	29·31	497·9	„
15	9·40	486·0	„	17·86	507·0	645·2	18·53	482·1	666·6	29·36	501·1	633·8
20	9·81	486·7	601·0	17·39	508·1	646·0	18·55	481·9	„	29·56	502·9	„
25	10·11	488·9	595·7	18·06	507·9	647·1	18·55	482·1	663·6	29·65	503·0	„
30	10·11	488·1	593·4	18·06	506·9	649·3	18·70	480·7	661·2	29·73	505·1	638·2
35	9·67	488·6	593·8	17·88	506·1	„	19·13	480·3	660·6	29·78	500·0	„
40	9·34	487·2	591·5	17·31	506·7	„	19·44	480·4	659·8	29·68	502·8	„
45	8·57	487·9	593·1	17·34	505·0	„	19·39	478·5	658·8	29·68	503·0	643·1
50	9·00	487·9	595·6	17·15	505·7	649·6	19·78	477·0	660·2	29·75	504·0	„
55	9·24	489·1	599·0	16·84	505·9	650·3	21·12	476·2	659·2	29·89	505·3	„

HOUR, ...	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1	2
BIFILAR THERMOMETER, .	55·9	55·9	55·9	55·8	55·7	55·4	55·2	55·0	54·4	54·0	53·8	53·7	53·8	54·2	54·9	55.2	55·3
BALANCE THERMOMETER,	55·5	55·6	55·6	55·6	55·5	55·5	55·3	55·0	54·4	54·4	54·0	54·0	54·0	54·5	54·9	55·0	55·4
OBSERVER'S INITIAL, . .	B	B	B	B	D	D	D	D	W	W	W	W	H	H	H	H	B

BIFILAR. Observed 2m after the Declination. k=0·0001205.
BALANCE. Observed 3m after the Declination. k=0·000015 approximately.

May 27d 1h 30m. Clock error previously + 14s. Clock set right.

Göttingen Mean Time of Declination Observation.	MAY 26, 27.						JUNE 21, 22.					
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	°	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		2h.			6h.			10h.			14h.	
0	25 29·98	504·5	644·8	25 23·91	514·5	670·2	25 20·57	512·8	668·0	25 25·27	499·9	656·1
5	29·91	505·2	645·8	23·93	514·7	673·1	20·97	511·5	,,	25·38	499·7	657·7
10	29·82	504·0	649·8	24·00	515·5	674·4	21·22	510·9	666·3	25·27	499·9	657·3
15	29·85	502·9	650·4	23·86	512·4	673·6	21·37	511·0	,,	25·27	499·4	658·4
20	29·62	501·3	651·4	23·53	510·6	674·5	21·37	508·9	666·9	25·41	500·1	660·3
25	29·51	501·2	654·2	23·43	510·9	,,	21·78	509·8	,,	25·43	500·9	656·7
30	29·44	503·5	648·0	23·26	510·2	,,	22·02	510·0	,,	25·79	499·3	657·5
35	29·63	507·4	653·0	23·04	510·9	,,	21·98	509·7	664·6	26·43	498·0	657·9
40	29·44	509·9	,,	23·26	512·4	,,	21·95	508·4	,,	26·50	498·9	657·3
45	29·31	511·4	654·6	23·36	513·9	672·5	22·03	507·9	,,	26·42	499·9	655·8
50	29·31	509·7	657·4	23·53	515·4	,,	22·16	507·1	,,	26·25	500·4	657·9
55	28·94	507·1	,,	23·53	513·5	,,	22·56	504·4	664·0	26·10	500·2	656·6
		3h.			7h.			11h.			15h.	
0	25 28·65	512·4	,,	25 23·26	512·7	674·1	25 22·72	504·1	664·1	25 26·12	500·9	657·8
5	28·67	508·5	660·0	23·14	510·4	,,	23·06	505·8	,,	25·98	501·8	658·3
10	28·64	509·7	660·8	23·12	510·7	,,	22·72	506·5	,,	25·95	502·1	657·6
15	28·59	512·0	,,	23·26	511·7	673·0	23·12	506·8	,,	25·95	502·6	656·9
20	28·64	513·6	661·4	23·12	512·9	,,	23·19	505·1	,,	25·92	502·4	657·8
25	28·64	509·6	663·3	23·12	512·7	,,	22·72	504·6	,,	25·72	501·7	659·2
30	27·96	505·0	666·0	23·12	512·2	672·6	23·12	506·0	,,	25·65	501·0	659·3
35	27·83	505·9	,,	22·99	512·4	671·6	22·87	505·6	,,	25·31	500·8	659·6
40	27·83	505·8	665·6	22·72	512·0	673·1	23·19	505·7	,,	25·27	501·3	661·3
45	27·47	505·3	667·1	22·74	512·0	673·3	*27·63	505·5	659·8	25·27	501·5	662·3
50	27·29	510·9	664·3	22·65	512·4	,,	27·49	504·1	,,	25·18	502·0	661·6
55	27·61	517·3	664·8	22·65	511·4	,,	27·60	504·3	,,	25·16	502·5	661·0
		4h.			8h.			12h.			16h.	
0	25 27·43	514·8	663·4	25 22·65	514·1	671·8	25 27·83	505·0	656·8	25 25·02	502·9	659·2
5	27·80	514·5	,,	23·17	514·0	,,	27·83	505·6	,,	24·96	503·0	656·8
10	27·31	514·1	,,	23·26	515·0	,,	27·47	504·5	,,	25·01	502·5	657·9
15	26·84	512·6	,,	23·26	515·9	670·8	27·29	503·6	,,	24·62	502·7	657·0
20	26·94	512·4	664·9	22·49	512·7	,,	27·02	503·3	,,	24·57	502·9	657·3
25	26·52	509·4	,,	21·98	512·3	,,	26·48	502·9	,,	24·60	502·3	658·8
30	26·30	508·9	,,	21·78	512·6	673·2	26·15	502·5	654·8	24·74	501·9	660·0
35	26·22	508·3	669·8	21·91	511·5	,,	26·32	503·4	,,	24·64	501·7	660·4
40	25·98	508·4	,,	21·24	509·5	,,	26·08	502·9	,,	24·40	502·1	659·3
45	25·95	510·1	,,	21·14	511·1	675·5	26·48	502·3	,,	24·20	502·3	659·3
50	25·81	509·5	,,	21·24	511·4	,,	26·22	502·1	,,	23·93	502·5	659·2
55	25·48	510·1	673·0	21·44	513·3	,,	26·08	502·5	,,	24·08	501·3	659·5
		5h.			9h.			13h.			17h.	
0	25 25·39	510·7	,,	25 22·38	513·4	674·5	25 25·85	502·6	,,	25 24·03	500·8	658·7
5	25·27	511·3	,,	22·65	512·1	,,	25·95	501·4	,,	24·06	500·3	659·1
10	25·14	511·4	,,	21·84	510·9	,,	25·85	500·6	,,	24·15	499·1	659·0
15	24·94	512·6	,,	21·76	511·6	674·8	25·56	500·5	655·8	24·27	499·2	660·4
20	24·74	512·9	,,	21·34	512·5	,,	25·27	501·6	,,	24·35	499·8	659·5
25	24·47	511·4	,,	21·24	513·9	,,	25·27	501·5	,,	23·98	499·2	660·1
30	24·06	509·9	673·2	21·55	514·3	672·9	25·27	501·2	,,	23·79	498·6	660·7
35	23·88	510·4	,,	21·69	513·4	,,	25·27	500·5	658·1	23·36	499·0	660·5
40	24·47	515·1	673·7	21·62	512·0	,,	25·27	499·8	,,	23·32	498·4	662·5
45	24·64	520·9	671·2	21·84	511·0	674·8	25·41	499·3	,,	23·30	498·1	660·8
50	24·47	519·2	,,	21·95	509·7	,,	25·27	499·9	,,	23·17	498·1	660·6
55	24·17	516·3	,,	21·98	508·3	,,	25·27	499·9	,,	23·19	497·3	661·1

HOUR, ...	2	3	4	5	6	7	8	9	10	10	11	12	13	14	15	16	17
BIFILAR THERMOMETER, .	55·3	55·7	55·7	55·9	56·6	56·6	56·3	55·8	55.7	65·7	65·0	64·0	63·4	63·0	62·1	61·4	60·6
BALANCE THERMOMETER, .	55·4	55·4	55·5	55·8	56·2	56·2	56·0	55·9	55·8	64·8	64·3	63·7	63·2	62·7	62·5	61·9	61·0
OBSERVER'S INITIAL, . .	B	B	D	D	W	W	H	H		D	D	D	D	W	W	W	W

BIFILAR. Observed 2m after the Declination. $k=0·0001205$.
BALANCE. Observed 3m after the Declination. $k=0·000015$ approximately.

* June 21d. See note, page 38, on the Declination Observations.

Göttingen Mean Time of Declination Observation.	June 21, 22.											
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		18h.			22h.			2h.			6h.	
0	25 23·14	497·1	663·7	....	500·5	660·0	....	504·3	641·6	....	514·5	651·2
5	22·92	497·8	662·0	....	500·4	660·3	....	503·9	642·2	....	514·6	„
10	22·72	498·2	663·2	....	500·4	661·6	....	503·2	641·9	....	514·1	„
15	22·50	498·4	663·5	....	501·3	661·4	....	502·2	643·1	....	514·7	652·6
20	22·63	497·2	„	....	501·6	661·8	....	502·7	645·6	....	514·8	„
25	22·55	497·7	„	....	501·7	„	....	503·6	643·0	....	515·8	„
30	22·49	497·3	663·6	....	501·9	662·0	....	504·9	642·8	....	516·3	„
35	22·38	496·9	„	....	501·8	„	....	505·3	642·7	....	516·9	„
40	21·86	496·5	„	....	501·8	„	....	504·7	645·6	....	517·0	„
45	21·73	495·8	665·3	....	502·1	„	....	504·1	645·5	....	516·9	„
50	21·89	495·7	„	....	501·2	664·3	....	503·5	646·6	....	516·7	„
55	21·62	494·5	„	....	500·9	„	....	503·9	646·3	....	517·4	„
		19h.			23h.			3h.			7h.	
0	25 21·79	494·4	665·9	....	501·1	664·1	....	503·9	646·4	....	517·7	654·9
5	22·53	495·9	„	....	500·1	„	....	503·3	647·3	....	517·4	„
10	22·60	496·4	„	....	500·3	662·7	....	502·8	645·9	....	517·8	„
15	22·76	497·4	664·8	....	500·0	660·6	....	501·8	644·9	....	517·4	„
20	22·90	496·5	„	....	499·3	658·5	....	502·5	643·6	....	517·1	„
25	23·14	496·1	„	....	499·4	657·0	....	502·9	642·7	....	517·7	„
30	23·19	496·1	665·2	....	499·8	654·7	....	503·2	642·3	....	516·5	„
35	23·64	496·1	„	....	499·9	652·8	....	503·1	642·4	....	516·0	„
40	23·81	495·3	„	....	499·2	649·6	....	502·7	642·7	....	515·3	„
45	23·34	495·1	666·4	....	498·7	646·6	....	501·7	642·7	....	516·1	„
50	23·90	496·1	„	....	498·1	646·1	....	502·2	642·1	....	516·2	„
55	24·28	497·5	667·2	....	498·3	643·5	....	503·5	640·7	....	516·5	„
		20h.			0h.			4h.			8h.	
0	25 24·44	496·3	665·7	....	499·0	639·0	....	503·7	643·7	....	515·3	657·4
5	24·62	495·9	666·0	....	500·2	638·1	....	504·0	„	....	516·0	„
10	24·77	495·9	„	....	500·7	638·2	....	504·6	„	....	515·7	658·2
15	24·87	496·6	671·9	....	501·6	637·2	....	505·6	642·5	....	515·2	658·9
20	25·02	497·4	„	....	501·3	638·2	....	506·0	„	....	514·3	660·3
25	25·11	496·7	„	....	502·2	637·6	....	506·4	„	....	514·0	660·5
30	25·21	497·5	670·8	....	502·4	637·2	....	506·9	644·3	....	514·4	661·7
35	25·27	498·4	„	....	502·6	637·3	....	507·5	„	....	514·1	662·1
40	25·34	498·4	666·8	....	502·6	„	....	508·5	„	....	513·8	661·7
45	25·27	497·4	664·3	....	502·6	„	....	508·4	643·3	....	513·6	662·2
50	25·72	499·4	„	....	502·4	„	....	508·4	„	....	512·9	„
55	25·41	497·7	„	....	503·2	„	....	510·1	„	....	512·9	662·8
		21h.			1h.			5h.			9h.	
0	25 25·43	499·6	663·1	....	502·5	„	....	509·5	643·8	....	511·9	„
5	25·56	499·1	„	....	502·7	„	....	510·5	„	....	511·8	662·9
10	25·51	499·0	„	....	502·7	640·8	....	510·7	„	....	510·8	„
15	25·81	499·1	663·1	....	503·6	639·8	....	511·1	643·0	....	510·4	„
20	25·95	499·6	„	....	504·7	638·0	....	512·9	„	....	511·0	662·2
25	25·95	498·9	„	....	504·9	639·7	....	513·8	„	....	511·8	„
30	26·10	499·8	661·1	....	504·4	640·2	....	513·5	648·5	....	511·3	„
35	26·08	499·8	„	....	504·5	639·4	....	513·2	„	....	510·8	„
40	26·03	499·9	„	....	504·4	639·2	....	512·7	„	....	510·5	„
45	25·95	500·7	660·2	....	503·7	641·0	....	512·8	649·4	....	510·1	„
50	26·22	500·9	„	....	506·2	644·9	....	514·3	„	....	509·7	„
55	26·25	500·8	„	....	504·7	„	....	514·9	„	....	509·9	656·5

HOUR, ...	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10
BIFILAR THERMOMETER, .	59·9	59·5	59·7	60·1	61·1	62·0	63·2	64·3	65·8	67·0	68·0	69·0	69·9	70·7	71·0	70·8	69·7
BALANCE THERMOMETER, .	60·2	60·0	60·1	60·5	61·0	62·0	62·6	64·0	64·8	65·8	66·9	67·5	68·4	68·8	69·3	69·6	68·4
OBSERVER'S INITIAL, . . .	H	H	H	H	B	B	B	B	W	W	H	H	D	D	B	B	

BIFILAR. Observed 2m after the Declination. $k=0·0001205$.
BALANCE. Observed 3m after the Declination. $k=0·000015$ approximately.

June 22d 9h 5m. Discovered several fibres of the Declination suspension thread broken, and, on removing the box cover, the stirrup of the magnet was found resting on the copper ring. The observations of Declination are not given after 21d 22h, as the fibres were probably breaking throughout the day; the observations before 22h are probably affected by a considerable torsion force.

Göttingen Mean Time of Declination Observation.	July 19, 20.											
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		10h.			14h.			18h.			22h.	
0	25 20·88	506·9	654·6	25 21·86	506·1	649·0	25 18·48	500·9	647·1	25 20·72	490·7	652·0
5	20·77	507·7	”	21·84	506·0	648·5	18·55	499·7	648·4	20·57	491·7	”
10	20·94	508·6	655·0	21·78	506·6	”	18·10	500·1	”	20·57	492·3	”
15	21·12	509·0	”	22·32	507·2	649·8	18·38	500·9	”	20·65	492·7	647·7
20	21·41	509·7	”	22·45	506·4	”	18·55	500·6	”	21·17	492·9	”
25	21·73	509·2	”	22·38	506·2	”	18·12	500·7	”	21·44	492·5	”
30	21·73	509·3	”	22·15	505·8	647·6	18·38	500·9	”	21·89	491·7	”
35	21·88	509·4	”	21·88	505·4	”	18·41	500·3	647·5	22·09	491·7	647·9
40	21·84	509·3	653·6	21·84	505·7	”	18·06	499·8	”	22·53	492·0	”
45	21·69	508·6	”	22·00	505·5	646·7	18·05	499·9	647·9	22·76	491·9	”
50	21·68	508·8	”	21·75	504·0	”	17·89	499·3	649·0	22·79	491·4	”
55	21·78	509·2	”	21·53	503·8	”	17·88	499·4	648·6	23·14	490·2	”
		11h.			15h.			19h.			23h.	
0	25 22·05	509·9	”	25 21·64	504·3	648·0	25 17·61	498·4	”	25 23·24	490·8	648·1
5	22·18	510·5	651·8	21·98	504·0	”	17·39	497·8	”	23·27	490·2	”
10	22·11	511·3	”	21·84	504·6	”	17·31	498·9	650·2	23·54	491·5	”
15	22·29	511·1	”	22·09	503·6	650·1	17·74	498·3	652·1	23·93	492·2	”
20	22·52	510·4	650·0	22·09	503·6	”	17·47	499·6	”	24·15	490·8	”
25	22·65	510·4	”	22·00	502·5	”	17·47	498·2	652·3	24·37	488·3	”
30	22·45	509·9	”	22·03	501·4	649·3	17·32	498·5	”	24·47	487·2	”
35	22·45	508·8	”	21·93	502·0	”	17·31	497·9	”	24·60	489·8	”
40	22·45	508·4	”	22·29	501·5	”	17·14	497·5	”	25·14	490·8	”
45	22·42	508·0	649·4	22·06	501·5	649·7	17·20	496·7	”	25·25	489·2	”
50	22·08	507·1	”	22·45	500·4	”	17·34	497·2	”	24·94	487·7	642·7
55	22·05	507·0	”	21·88	501·4	”	17·81	496·6	”	25·18	489·8	”
		12h.			16h.			20h.			0h.	
0	25 21·96	507·4	648·8	25 21·91	502·2	651·3	25 17·88	495·7	”	25 25·27	488·8	”
5	21·86	507·5	”	21·91	502·2	”	17·88	495·9	”	25·54	487·1	”
10	22·05	507·9	”	21·95	502·2	”	17·88	495·5	”	25·83	489·9	641·3
15	21·95	508·3	647·6	21·91	502·8	”	18·23	494·9	”	25·90	488·7	641·7
20	21·91	507·9	”	21·91	502·8	”	18·48	495·0	652·0	25·95	490·5	”
25	21·68	508·3	”	21·96	503·2	”	18·01	495·2	”	26·30	490·0	”
30	21·78	508·2	”	21·96	504·6	645·6	18·01	495·5	654·7	26·60	490·2	”
35	21·84	507·6	”	21·62	506·5	”	17·88	495·1	”	26·73	490·8	641·3
40	21·61	508·1	”	21·34	507·1	”	17·81	494·3	656·3	27·09	490·2	”
45	21·73	507·9	”	20·63	506·7	”	18·01	495·0	”	27·00	489·7	”
50	21·84	507·5	”	19·70	506·9	640·6	18·48	494·4	”	27·09	489·9	”
55	21·59	507·1	646·3	19·65	508·8	”	18·55	493·2	657·6	27·19	489·8	”
		13h.			17h.			21h.			1h.	
0	25 21·64	507·1	646·3	25 19·81	504·3	644·1	25 18·59	492·8	659·0	25 27·26	489·1	”
5	21·75	506·5	”	18·62	504·4	”	18·80	493·5	”	27·29	489·6	”
10	21·64	506·4	”	18·62	503·4	”	18·99	494·6	”	27·29	491·0	”
15	21·76	506·3	”	18·38	503·3	646·8	19·22	492·2	”	27·53	490·5	640·3
20	21·46	506·4	”	18·38	502·3	”	19·22	492·4	655·9	27·74	492·1	”
25	21·56	506·9	”	18·41	502·8	”	19·80	493·4	”	27·83	492·0	”
30	21·71	506·5	”	18·48	502·0	647·3	19·93	492·3	654·8	27·61	490·3	”
35	21·78	506·3	”	18·65	500·9	”	19·70	491·5	653·9	27·46	492·1	640·8
40	21·86	506·4	”	18·32	501·4	”	19·96	494·2	653·2	27·61	493·6	”
45	21·84	505·5	”	17·99	499·7	645·9	20·37	491·8	653·5	27·56	494·8	”
50	21·64	506·0	648·2	17·89	501·7	”	20·50	491·8	”	27·49	495·2	”
55	21·78	506·5	”	18·06	501·2	”	20·52	493·2	651·3	27·56	495·0	”

HOUR, ...	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1
BIFILAR THERMOMETER, . .	60·4	60·4	60·3	60·3	60·3	60·0	59·7	59·0	58·2	57·6	57·4	57·3	57·4	57·4	57·3	57·3
BALANCE THERMOMETER, . .	60·2	60·5	60·6	60·6	60·6	60·3	60·0	59·5	58·8	58·2	58·0	57·9	57·8	57·6	57·5	57·5
OBSERVER'S INITIAL, ...	D	D	D	D	H	H	H	H	B	B	B	B	W	W	W	W

BIFILAR. Observed 2m after the Declination. $k=0{\cdot}0001205$.
BALANCE. Observed 3m after the Declination. $k=0{\cdot}000015$ approximately.

Göttingen Mean Time of Declination Observation.	JULY 19, 20.						AUGUST 25, 26.					
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		2^h.			6^h.			10^h.			14^h.	
0	25 27·46	497·0	640·8	25 21·96	509·7	658·3	25 21·73	506·4	*815·8	25 21·10	503·3	794·1
5	27·60	496·2	„	21·88	509·4	„	21·12	507·5	812·9	20·65	502·4	794·9
10	27·61	497·9	„	21·64	509·6	„	20·70	511·4	813·0	20·25	501·8	797·2
15	27·51	497·2	642·0	21·78	510·3	„	22·05	508·0	813·1	20·61	500·8	798·1
20	27·54	499·2	„	21·86	510·7	„	22·22	506·8	813·4	20·40	500·6	798·8
25	27·36	498·1	„	21·78	511·0	655·1	22·58	504·5	816·0	21·14	501·8	798·9
30	27·29	498·9	„	21·79	512·1	„	22·45	503·5	815·1	21·32	502·5	798·9
35	27·14	499·0	642·2	21·78	511·8	„	22·03	504·7	„	21·10	503·1	„
40	26·73	499·4	„	21·53	512·2	„	22·02	506·0	„	22·82	501·2	799·2
45	26·75	499·5	„	21·48	511·8	„	22·65	508·9	811·8	23·88	499·4	799·4
50	26·59	498·9	„	21·44	511·7	„	23·04	510·7	„	25·93	498·7	797·0
55	26·26	498·9	„	21·44	511·2	„	23·74	507·4	„	26·89	500·0	792·7
		3^h.			7^h.			11^h.			15^h.	
0	25 26·15	499·2	646·9	25 21·58	510·3	„	25 23·27	507·7	810·6	25 28·12	500·1	788·8
5	25·95	498·9	„	21·78	510·0	„	23·43	510·4	808·1	28·68	499·7	785·0
10	25·68	499·7	„	21·82	509·8	„	23·50	509·6	„	27·96	501·6	779·4
15	25·31	500·2	645·6	21·91	510·1	„	23·29	507·9	807·3	27·24	500·6	776·5
20	25·14	500·8	„	21·91	510·2	„	23·39	506·4	„	26·45	501·6	774·4
25	24·89	502·1	„	21·93	510·7	„	23·24	506·4	809·2	25·78	505·5	771·1
30	24·60	502·6	645·5	22·13	510·9	„	23·24	506·9	808·2	26·01	505·5	771·0
35	24·37	503·2	„	22·11	511·8	„	23·14	507·7	„	25·95	503·5	769·1
40	24·15	503·5	„	22·15	512·4	„	23·26	506·4	„	25·27	503·9	767·9
45	24·10	504·4	648·3	22·08	511·5	„	23·57	507·0	810·1	24·85	503·7	„
50	23·86	504·2	„	22·38	511·4	655·4	23·91	506·6	807·9	25·07	499·7	768·1
55	23·66	506·0	„	22·42	511·1	„	24·20	505·0	„	25·07	499·5	766·8
		4^h.			8^h.			12^h.			16^h.	
0	25 23·76	507·5	649·5	25 22·43	510·3	„	25 24·10	507·4	806·0	25 24·15	498·2	765·2
5	23·59	507·1	„	22·47	510·0	„	24·13	506·7	803·9	23·32	498·1	763·7
10	23·39	507·9	„	22·47	509·9	655·3	23·79	502·8	„	22·60	497·7	763·2
15	23·26	507·7	„	22·45	509·5	„	23·44	504·6	796·7	21·27	498·5	„
20	23·12	508·2	„	22·52	509·8	„	24·00	505·0	„	20·94	500·1	761·9
25	23·12	507·4	„	22·58	508·9	„	24·45	507·5	„	20·01	501·1	762·9
30	22·99	507·1	650·1	22·58	509·5	„	24·08	509·3	799·4	19·63	501·7	764·2
35	22·79	507·3	„	22·58	508·9	„	24·28	509·9	796·4	19·26	501·7	765·2
40	22·65	507·2	652·1	22·52	509·1	„	23·64	508·7	„	19·40	499·9	768·3
45	22·58	507·2	„	22·43	509·5	„	22·97	507·7	792·7	19·63	496·9	771·3
50	22·58	507·4	„	22·45	509·8	„	22·15	507·5	„	18·55	500·1	„
55	22·45	507·8	654·5	22·45	509·8	„	21·93	509·7	„	20·05	497·2	774·3
		5^h.			9^h.			13^h.			17^h.	
0	25 22·38	507·7	„	25 22·52	510·5	„	25 22·74	512·1	791·1	25 19·26	498·6	775·5
5	22·45	508·1	„	22·45	510·1	„	23·19	511·1	790·9	19·22	497·8	779·3
10	22·45	507·5	„	22·45	509·8	„	23·21	511·6	„	18·21	499·9	779·1
15	22·38	508·5	„	22·45	508·9	„	23·04	513·5	786·3	17·45	499·4	779·6
20	22·38	508·7	„	22·35	509·9	„	22·63	514·0	„	17·20	499·7	780·1
25	22·38	507·9	656·3	22·02	509·4	„	22·83	513·2	„	16·67	499·0	781·6
30	22·18	508·6	„	21·98	509·4	„	22·97	512·1	785·4	16·58	499·6	783·0
35	22·05	509·0	658·5	21·91	508·9	„	22·85	510·0	„	16·20	499·6	784·9
40	21·98	509·8	„	22·05	509·7	„	22·50	507·0	788·5	16·13	500·0	788·0
45	22·05	509·1	„	22·32	510·3	„	22·18	505·5	790·6	15·94	499·0	791·0
50	21·98	508·8	„	22·32	509·6	„	21·73	504·5	„	16·20	499·6	792·5
55	21·90	508·6	658·2	22·35	509·0	651·8	21·56	504·5	792·5	16·17	499·1	792·6

HOUR, ...	2	3	4	5	6	7	8	9	10	10	11	12	13	14	15	16	17
BIFILAR THERMOMETER, .	57·3	57·6	57·7	57·9	58·0	58·2	58·2	58·0	57·9	64·1	64·2	64·2	64·0	63·7	63·0	62·3	61·8
BALANCE THERMOMETER, .	57·5	57·5	57·8	57·9	58·0	58·2	58·2	58·0	58·0	64·0	64·2	64·3	64·0	63·8	63.4	62·9	62·3
OBSERVER'S INITIAL, . .	H	H	B	B	D	D	W	W		H	H	H	H	B	B	B	B

BIFILAR. Observed 2ᵐ after the Declination. $k=0·0001205$.
BALANCE. Observed 3ᵐ after the Declination. $k=0·000015$; k (August) $= 0·000014$ approximately.

---

* The readings of the Balance Magnetometer during the August term are not comparable with those on the previous or succeeding terms, owing to re-adjustments of the instrument.

Göttingen Mean Time of Declination Observation.	AUGUST 25, 26.											
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		18^h.			22^h.			2^h.			6^h.	
0	25 16·37	494·9	792·0	25 22·20	485·3	809·3	25 28·01	505·0	818·0	25 21·07	507·6	828·3
5	16·08	498·9	793·2	22·76	482·8	811·0	27·76	504·9	„	20·85	508·7	826·9
10	16·77	496·9	796·1	22·92	484·8	„	27·70	506·4	817·6	20·79	507·8	826·1
15	16·21	498·9	„	22·77	481·4	814·8	27·76	504·0	„	20·95	508·0	826·0
20	17·20	498·6	„	22·49	483·3	815·2	27·43	506·5	„	20·81	506·8	„
25	17·17	496·5	796·7	23·64	483·2	„	27·36	504·5	„	20·75	507·3	„
30	16·50	495·7	„	23·44	483·2	„	26·91	507·3	819·5	20·70	507·7	822·6
35	15·90	495·3	796·1	23·81	484·6	815·2	27·11	506·9	„	20·70	506·5	„
40	15·90	497·7	„	23·95	483·2	815·2	26·96	503·2	823·7	20·70	507·4	„
45	16·58	495·7	„	23·91	482·4	813·8	26·66	503·0	822·7	20·70	507·5	819·9
50	17·20	493·1	797·1	24·27	485·2	811·4	28·23	504·3	„	20·61	507·1	„
55	17·07	491·6	„	24·40	485·2	„	26·77	507·7	„	20·57	506·6	„
		19^h.			23^h.			3^h.			7^h.	
0	25 16·91	492·5	„	25 25·25	484·4	810·5	25 26·43	508·5	823·8	25 20·57	506·5	816·1
5	16·95	491·1	798·2	26·43	481·1	813·5	26·55	508·4	„	20·57	507·1	814·8
10	16·94	490·6	798·8	26·28	480·1	812·0	26·40	507·9	„	20·70	507·6	„
15	17·91	489·3	802·0	26·39	480·5	813·3	26·45	509·1	823·5	20·70	507·6	„
20	18·62	488·3	„	26·05	484·3	811·0	26·37	511·2	„	20·88	506·7	813·8
25	18·99	486·3	804·0	27·29	479·8	813·8	25·95	507·8	„	20·88	506·7	„
30	19·33	483·5	805·2	26·75	480·5	813·3	25·63	507·1	828·1	21·04	506·5	810·1
35	19·53	484·0	805·3	26·86	482·4	813·2	25·39	507·1	830·3	20 97	507·6	„
40	19·36	485·1	805·6	28·03	484·7	814·7	25·41	509·2	829·0	21·04	508·0	„
45	19·56	485·7	„	27·76	483·4	814·4	25·21	504·2	831·3	21·10	508·2	„
50	18·45	486·8	804·8	28·57	482·0	814·4	25·05	504·6	831·8	20·97	509·3	806·4
55	18·86	485·4	„	28·37	487·1	813·2	24·62	504·0	832·1	21·14	509·0	„
		20^h.			0^h.			4^h.			8^h.	
0	25 16·53	488·3	„	25 28·20	487·9	811·4	25 24·47	505·3	831·6	25 21·31	508·7	„
5	20·05	488·4	„	28·59	490·9	811·2	24·47	504·0	832·0	21·31	507·1	„
10	19·83	490·2	„	28·91	490·9	„	24·47	504·6	831·6	21·05	508·8	„
15	18·18	492·0	„	28·97	495·6	809·6	24·04	502·8	„	20·95	511·6	„
20	21·66	493·0	„	29·51	493·2	809·4	23·93	503·3	„	20·60	512·7	„
25	21·51	490·4	801·2	29·26	493·0	810·5	23·64	502·8	830·8	20·41	512·6	„
30	21·21	491·6	802·3	29·65	493·6	809·9	23·53	502·2	831·3	20·27	513·5	808·1
35	20·14	492·3	800·6	29·73	497·1	809·2	23·53	502·8	832·4	20·57	514·5	„
40	20·23	487·2	798·2	29·48	497·2	810·0	23·37	503·7	832·5	20·82	512·0	809·7
45	19·12	490·4	796·8	30·12	498·0	808·6	23·26	502·6	832·1	20·70	508·0	„
50	18·68	490·8	„	30·29	496·3	„	22·96	505·3	832·0	20·67	504·8	„
55	19·83	……	„	29·58	492·9	810·3	23·12	506·9	„	17·20	506·6	808·1
		21^h.			1^h.			5^h.			9^h.	
0	25 21·17	488·6	802·1	25 29·51	497·3	808·9	25 22·76	505·9	832·0	25 15·59	512·0	80·63
5	21·10	490·6	802·8	28·37	500·5	805·9	22·65	506·1	830·4	15·12	517·7	„
10	20·30	489·1	803·4	29·44	498·5	„	22·58	504·6	„	15·96	519·1	„
15	21·14	487·1	802·5	29·17	503·3	„	22·45	505·4	„	17·20	518·3	„
20	19·98	488·5	801·7	29·08	501·9	„	22·29	505·1	830·3	18·01	514·5	807·2
25	21·55	482·9	805·5	28·95	501·0	809·7	22·09	507·3	„	18·12	512·6	„
30	21·78	485·9	„	28·94	503·5	811·9	21·98	510·0	828·8	18·52	511·1	„
35	21·76	487·4	803·2	28·77	501·3	813·0	22·03	511·1	827·2	18·55	509·4	„
40	21·66	483·0	804·1	29·29	500·9	„	21·73	510·2	828·0	18·55	509·5	„
45	19·89	486·1	803·7	28·30	502·0	„	21·48	508·8	828·8	19·10	509·1	„
50	21·37	486·7	805·9	28·23	503·2	815·9	21·26	508·6	„	18·82	508·7	806·5
55	22·58	485·1	807·2	28·08	502·7	„	21·15	509·0	„	18·99	508·9	„

HOUR,	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10
BIFILAR THERMOMETER,	61·0	60·2	59·8	59·7	60·0	61·0	62·2	63·4	64·5	65·2	65·0	64·7	64·1	63·9	63·1	62·6	62·0
BALANCE THERMOMETER,	61·5	60·8	60·4	60·1	60·5	61·2	62·3	63·2	64·1	64·7	64·5	64·3	64·0	63·9	63·4	63·0	62·5
OBSERVER'S INITIAL,	D	D	D	W	W	W	W	H	H	H	B	B	D	D	W	W	

BIFILAR. Observed 2^m after the Declination. $k=0·0001205$.
BALANCE. Observed 3^m after the Declination. $k=0·000014$ approximately.

Göttingen Mean Time of Declination Observation.	SEPTEMBER 20, 21.											
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		10^{h}.			14^{h}.			18^{h}.			22^{h}.	
0	25 15·49	510·0	806·4	25 16·85	508·0	790·9	25 20·41	503·0	777·1	25 18·62	492·8	801·8
5	16·41	508·0	807·6	16·60	507·3	788·8	19·87	504·5	„	18·57	492·0	„
10	16·84	508·6	806·6	19·09	498·4	„	20·37	504·1	„	17·99	491·5	„
15	16·01	511·2	803·9	22·23	496·6	784·4	20·37	503·3	„	18·45	493·0	„
20	14·76	513·8	801·0	32·20	507·8	754·9	20·37	503·1	„	19·00	492·3	806·4
25	14·49	517·6	797·9	34·58	507·4	709·9	21·68	505·3	777·9	18·36	490·5	805·1
30	15·02	519·3	796·1	32·17	500·7	668·7	23·26	504·4	„	18·66	490·1	808·2
35	15·72	517·2	795·9	29·06	499·0	652·0	22·99	506·4	„	19·04	487·7	„
40	15·83	516·5	795·3	26·57	509·7	651·5	22·06	508·0	769·5	19·98	484·4	813·3
45	15·63	513·8	796·3	24·10	509·1	654·2	21·64	507·9	769·4	20·35	482·1	„
50	15·39	513·4	796·7	23·93	511·6	666·7	21·22	505·8	„	20·16	485·1	815·6
55	16·06	511·7	798·2	24·50	512·2	678·4	20·23	506·0	„	20·72	486·9	„
		11^{h}.			15^{h}.			19^{h}.			23^{h}.	
0	25 16·73	510·6	800·9	25 23·76	511·6	687·3	25 19·53	505·7	770·3	25 21·05	486·4	811·5
5	16·87	509·9	801·8	22·22	508·7	691·3	19·17	504·7	„	20·30	486·8	„
10	17·34	509·7	802·7	20·52	509·9	693·8	18·55	506·0	774·9	19·40	493·1	808·5
15	17·88	509·7	803·5	20·05	508·4	698·4	17·56	508·7	„	20·85	488·2	„
20	18·01	510·5	801·1	19·31	506·0	703·1	17·51	508·4	777·5	19·96	489·2	809·2
25	18·62	511·4	801·3	17·71	507·5	708·9	16·53	508·4	„	21·14	492·0	„
30	19·42	511·5	804·2	17·42	506·0	715·5	15·91	507·5	„	21·91	492·1	„
35	19·83	510·6	804·3	16·77	508·4	720·5	15·77	506·7	780·8	21·37	495·9	„
40	19·36	511·0	804·0	16·33	509·1	725·5	15·19	507·6	„	22·35	497·5	804·3
45	19·22	511·9	803·3	16·51	507·7	731·5	15·72	507·3	784·3	22·50	496·1	„
50	19·22	513·6	803·6	16·53	506·5	735·6	15·49	506·7	„	22·20	495·5	„
55	19·63	513·9	803·8	15·72	509·5	741·0	14·82	507·8	„	22·90	495·7	„
		12^{h}.			16^{h}.			20^{h}.			0^{h}.	
0	25 19·42	513·7	804·1	25 16·67	511·6	„	25 15·17	505·4	787·7	25 23·09	496·7	„
5	19·56	512·8	804·6	16·53	510·6	744·5	14·28	505·5	789·1	24·71	496·6	803·7
10	19·36	512·4	805·2	16·13	511·2	746·1	14·49	506·0	791·3	24·18	494·7	„
15	19·22	511·9	„	16·26	510·4	748·5	15·16	505·4	792·9	23·95	492·1	„
20	19·22	511·7	„	15·86	511·6	„	15·32	503·0	795·5	22·80	497·8	797·0
25	19·22	511·5	„	15·59	509·3	„	15·16	502·5	„	23·64	496·1	„
30	19·09	512·2	„	15·86	507·1	754·6	15·16	503·4	„	23·59	494·9	„
35	19·09	512·8	„	15·86	507·7	760·5	15·59	503·0	798·5	23·26	497·1	„
40	19·09	512·3	„	16·43	507·6	765·1	15·83	500·7	„	24·11	499·6	„
45	18·80	512·0	„	17·44	508·0	„	15·64	501·8	„	24·85	501·6	798·4
50	18·75	512·7	„	17·59	508·5	„	15·88	499·6	800·2	26·08	505·9	„
55	18·59	511·4	„	17·24	509·5	„	14·65	500·6	„	27·88	505·4	„
		13^{h}.			17^{h}.			21^{h}.			1^{h}.	
0	25 19·27	510·0	806·3	25 17·05	509·8	„	25 15·22	500·9	802·0	25 26·96	503·7	799·8
5	19·07	509·4	„	16·80	508·5	„	15·49	499·7	„	26·86	499·9	„
10	18·68	511·6	„	16·55	508·5	766·8	15·16	499·7	„	27·46	501·6	794·8
15	19·10	512·0	„	16·50	508·1	„	15·74	496·9	„	27·70	504·3	„
20	19·17	512·9	„	16·75	504·8	772·3	15·19	494·4	805·8	27·93	505·9	„
25	19·09	511·8	804·1	17·88	503·0	„	14·89	498·5	„	27·78	504·6	„
30	19·15	510·5	803·3	17·89	504·3	„	14·65	497·3	799·7	27·93	503·6	„
35	18·57	512·4	800·1	18·59	504·7	„	14·51	499·5	796·4	27·58	502·0	798·8
40	18·48	510·6	„	19·17	501·7	775·9	15·96	498·9	796·9	27·41	500·1	„
45	18·03	509·4	799·0	19·27	502·5	„	16·53	497·0	„	27·47	493·5	„
50	17·74	509·7	795·8	19·83	501·5	„	17·83	494·2	800·3	27·73	498·0	„
55	17·20	509·8	793·5	20·32	502·5	„	17·98	492·3	801·7	27·06	498·0	799·1

HOUR, ...	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1
BIFILAR THERMOMETER, . . .	65·0	65·2	65·3	65·3	65·1	65·0	64·9	64·7	64·7	64·5	64·0	63·9	64·0	64·5	65·4	66·3
BALANCE THERMOMETER, . .	64·5	64·9	65·2	65·2	65·3	65·3	65·2	65·1	65·0	64·8	64·4	54·2	64·5	65·0	65·4	66·2
OBSERVER'S INITIAL, ...	B	B	B	B	D	D	D	D	W	W	W	W	H	H	H	H

BIFILAR. Observed 2ᵐ after the Declination. $k=0·0001205$.
BALANCE. Observed 3ᵐ after the Declination. $k=0·000013$ approximately.

Sept. 20ᵈ 14ʰ 35ᵐ. Bright auroral glare fron NW by N to N, extending from the horizon to about 12° altitude. No pencils nor pulsations visible. At 15ʰ the aurora had disappeared.

Göttingen Mean Time of Declination Observation.	SEPTEMBER 20, 21.						OCTOBER 18, 19.					
	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		2h.			6h.			10h.			14h.	
0	25 26·32	500·0	799·6	25 22·43	506·3	,,	25 16·11	518·9	816·5	25 20·01	517·5	787·4
5	26·32	501·9	,,	22·16	506·2	827·9	16·03	519·0	,,	19·81	517·8	,,
10	26·57	505·4	803·2	22·30	505·2	,,	16·53	520·8	815·8	19·29	518·3	788·7
15	26·57	507·1	800·5	20·34	510·7	822·4	17·58	521·2	,,	19·15	517·3	,,
20	27·81	509·8	799·9	20·05	513·8	821·4	17·78	520·0	814·2	19·44	516·4	,,
25	28·28	508·5	800·5	21·05	513·5	,,	17·38	519·5	,,	20·81	514·9	,,
30	28·28	506.5	801·1	21·17	509·4	,,	16·80	516·1	811·6	21·79	513·2	,,
35	27·38	502·6	801·2	20·75	510·0	,,	15·93	517·5	809·2	21·71	513·6	784·2
40	27·61	502·0	801·1	20·43	514·9	,,	16·60	520·2	809·6	20·63	515·8	779·3
45	27·27	502·2	798·8	21·12	519·0	814·8	17·32	520·7	807·8	20·55	516·5	774·2
50	27·24	502·5	799·2	21·78	521·4	,,	17·64	519·2	806·4	20·47	515·4	770·2
55	27·61	507·0	797·1	21·76	516·2	813·8	17·17	525·5	,,	19·87	515·4	765·9
		3h.			7h.			11h.			15h.	
0	25 27·27	507·2	797·8	25 20·65	508·0	819·7	25 17·34	521·4	804·0	25 19·89	514·8	761·3
5	27·20	507·2	,,	21·01	498·9	828·7	17·24	521·9	801·1	20·61	512·9	759·7
10	26·80	505·3	,,	19·63	497·0	837·1	15·99	520·7	799·9	21·88	509·6	,,
15	27·13	509·7	796·7	16·98	492·0	847·1	15·12	521·4	,,	22·87	504·6	754·0
20	27·14	512·8	,,	10·01	494·6	845·8	14·67	522·4	798·2	23·76	501·7	751·9
25	27·74	517·4	794·6	4·42	506·1	840·2	15·05	523·6	795·5	25·18	500·4	747·8
30	27·80	515·1	795·1	3·58	510·4	838·9	15·76	522·0	798·8	26·75	500·2	744·0
35	27·06	511·5	,,	4·19	511·1	836·4	15·63	520·2	797·3	28·14	500·7	737·5
40	26·86	510·9	,,	6·77	515·5	,,	15·19	519·0	798·3	29·02	501·6	730·4
45	27·04	511·5	797·8	9·25	511·8	836·2	14·83	519·6	796·4	29·78	502·0	724·2
50	27·11	511·2	,,	10·59	507·3	833·0	16·31	518·7	,,	29·83	505·9	715·5
55	26·72	512·4	,,	9·60	504·7	829·4	16·68	515·9	,,	29·58	509·9	711·0
		4h.			8h.			12h.			16h.	
0	25 26·48	512·1	799·2	25 8·46	505·1	827·6	25 16·52	514·4	797·3	25 29·33	514·3	706·4
5	26·39	512·4	,,	8·85	509·7	824·0	16·35	514·6	,,	28·72	510·5	700·4
10	25·76	512·0	,,	10·88	511·3	823·0	16·17	515·5	794·9	27·70	522·1	693·9
15	25·99	511·1	,,	12·74	512·0	817·7	15·96	514·5	,,	25·79	527·4	689·7
20	25·72	509·7	,,	13·75	512·2	815·8	15·86	514·8	,,	24·62	529·0	686·1
25	25·48	509·6	,,	14·85	511·6	,,	16·23	513·4	796·2	22·90	528·1	682·3
30	25·25	509·3	,,	16·06	507·5	813·7	16·82	513·1	794·5	20·34	528·2	684·6
35	24·78	510·5	,,	17·02	507·8	810·6	16·51	513·1	,,	18·45	527·6	688·7
40	24·25	509·3	,,	17·69	506·1	,,	16·53	514·0	,,	17·76	524·8	694·7
45	24·11	517·1	,,	18·82	505·3	,,	16·78	513·4	,,	16·71	523·4	697·7
50	23·98	513·9	807·5	19·02	505·7	809·2	17·17	513·6	,,	16·28	521·9	703·5
55	22·72	513·5	809·4	19·12	505·2	,,	17·41	514·2	,,	15·43	519·3	706·9
		5h.			9h.			13h.			17h.	
0	25 21·96	514·1	812·8	25 19·46	504·9	,,	25 17·64	515·3	796·1	25 15·00	517·4	710·8
5	21·88	515·2	815·0	19·36	505·6	,,	17·64	515·8	,,	15·25	517·1	719·6
10	20·67	516·8	817·6	19·36	508·1	803·8	17·17	515·2	,,	15·56	514·7	724·3
15	20·40	517·8	819·5	19·39	509·6	,,	17·76	515·0	796·0	15·14	513·5	728·9
20	20·63	522·3	820·6	19·36	510·3	801·3	18·10	514·8	,,	15·56	512·8	734·8
25	20·72	521·4	821·0	19·60	509·2	817·3	19·09	515·0	,,	16·13	512·5	739·2
30	20·10	520·7	,,	20·14	506·8	818·8	19·06	516·6	793·6	16·71	511·2	743·4
35	20·85	520·0	,,	19·80	507·2	817·3	19·49	517·3	,,	16·73	512·7	738·8
40	22·00	519·2	826·1	19·49	506·0	,,	19·96	516·3	791·3	16·44	516·1	744·3
45	22·87	516·5	,,	19·13	506·6	816·6	19·93	516·0	,,	16·67	516·7	746·1
50	22·58	509·1	829·1	19·53	507·0	,,	19·78	516·1	,,	17·12	516·2	750·9
55	22·20	507·2	,,	19·07	508·8	812·9	19·65	517·6	787·8	17·12	514·5	752·4

HOUR, ...	2	3	4	5	6	7	8	9	10	10	11	12	13	14	15	16	17
BIFILAR THERMOMETER, .	67·3	68·3	69·7	70·6	70·8	69·9	68·9	67·9	66·8	49·9	50·7	51·9	52·0	53·0	53·1	53·1	53·0
BALANCE THERMOMETER, .	67·0	67·7	68·4	69·3	69·5	68·6	68·0	67·5	66·9	49·8	50·5	52·0	52·4	53·5	53·5	53·8	54·0
OBSERVER'S INITIAL, . . .	H	D	D	W	W	B	H	H		D	D	D	D	W	W	W	W

BIFILAR. Observed 2m after the Declination. $k=0·0001205$.
BALANCE. Observed 3m after the Declination. $k=0·000013$ approximately.

OCTOBER 18, 19.

Göttingen Mean Time of Declination Observation.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		18^h.			22^h.			2^h.			6^h.	
0	25 16·89	514·2	754·6	25 17·88	500·3	820·2	25 24·53	516·0	786·9	25 18·12	512·8	813·0
5	17·17	513·6	757·8	18·59	506·2	„	23·81	515·7	785·3	18·21	514·3	811·7
10	15·54	513·6	759·9	17·29	505·3	818·6	23·95	515·9	783·7	18·46	515·6	810·7
15	17·74	513·7	„	18·62	504·8	818·5	23·93	517·4	„	18·62	517·0	810·5
20	17·79	514·1	764·1	18·82	506·5	818·1	24·85	518·7	787·2	18·93	517·8	810·0
25	17·85	515·2	763·9	18·93	502·9	816·6	24·60	517·3	787·6	19·47	518·6	808·4
30	17·98	514·8	764·9	18.32	504·1	815·2	24·51	515·0	787·8	19·86	518·5	808·5
35	18·15	514·8	765·4	18·60	505·7	813·6	24·27	513·4	786·0	20·37	519·1	807·8
40	18·25	514·2	773·7	18·73	504·5	816·6	24·04	514·8	785·3	20·54	519·9	806·9
45	17·99	514·9	776·1	19·80	504·4	815·9	23·29	516·9	785·3	20·74	518·8	806·2
50	18·30	513·9	779·2	19·96	501·4	815·8	23·73	516·8	782·7	20·72	520·0	804·2
55	17·72	515·1	779·2	18·68	500·9	814·3	23·12	518·7	„	20·35	520·2	803·8
		19^h.			23^h.			3^h.			7^h.	
0	25 17·88	514·9	„	25 18·59	504·9	812·2	25 22·96	517·5	780·3	25 20·45	519·7	„
5	17·96	815·1	780·3	19·67	504·8	810·7	22·55	514·1	785·4	20·20	519·3	„
10	17·67	517·5	780·3	20·23	505·9	811·0	22·02	517·9	783·5	20·25	519·9	804·9
15	17·42	518·7	„	20·47	505·2	811·9	22·96	522·3	787·0	20·00	518·9	„
20	17·31	517·7	„	21·55	511·1	808·1	23·12	521·7	788·0	20·11	519·0	„
25	17·20	515·8	781·7	23·59	509·5	808·3	22·92	516·9	788·8	19·98	519·8	„
30	17·04	513·0	782·2	22·65	502·1	809·6	22·77	516·3	794·7	19·42	520·5	„
35	16·55	513·1	783·8	21·95	504·8	808·3	22·76	518·0	790·5	19·33	520·4	„
40	16·84	512·6	788·1	21·29	500·3	808·0	22·69	516·6	791·3	19·71	519·0	805·5
45	16·92	512·0	„	21·88	502·4	807·3	22·52	517·5	793·0	20·08	519·0	„
50	16·92	512·6	790·4	21·53	505·1	807·0	22·30	516·2	793·7	19·96	517·3	806·8
55	16·70	513·8	792·1	21·78	506·0	805·3	22·05	517·2	793·0	19·91	515·0	807·1
		20^h.			0^h.			4^h.			8^h.	
0	25 16·43	514·5	794·0	25 22·65	503·8	„	25 22·08	518·8	792·9	25 19·71	512·3	816·2
5	16·91	512·2	796·8	22·08	505·1	804·0	21·95	519·7	792·7	19·70	509·0	819·9
10	16·53	511·6	„	22·38	506·1	803·4	21·88	518·1	793·3	18·35	510·4	„
15	16·35	511·3	800·0	22·22	506·4	800·9	21·88	518·1	792·7	17·67	510·6	820·1
20	16·53	510·6	801·4	22·53	509·1	800·9	21·71	519·1	790·8	17·17	510·7	820·4
25	16·85	510·5	„	22·85	507·7	799·1	21·46	520·5	789·6	16·10	511·0	821·2
30	16·78	508·9	803·7	22·72	507·8	797·4	21·32	521·2	789·3	15·32	512·5	„
35	16·89	509·8	„	22·85	508·2	795·9	21·34	524·6	788·8	14·73	513·6	„
40	17·12	509·4	804·8	22·70	510·4	793·8	21·37	526·6	792·1	14·51	516·8	„
45	16·46	511·0	„	22·82	510·8	„	21·12	526·3	791·9	15·32	514·6	„
50	16·71	510·6	805·8	23·12	510·8	792·6	21·05	523·1	795·7	15·29	511·8	820·5
55	16·57	508·4	„	23·24	511·3	791·2	21·88	520·4	798·9	13·98	510·9	„
		21^h.			1^h.			5^h.			9^h.	
0	25 16·08	508·2	808·5	25 23·32	511·2	789·7	25 21·48	518·5	801·5	25 13·03	513·0	818·1
5	16·53	507·3	„	23·63	512·7	788·5	21·49	509·1	805·5	13·03	513·6	817·8
10	16·31	506·6	812·5	23·63	510·6	788·6	20·67	503·1	816·2	13·91	513·2	817·8
15	16·17	505·7	„	23·76	510·7	788·5	19·17	499·4	817·9	14·58	511·6	819·5
20	16·41	506·0	817·7	23·63	509·6	787·6	16·44	509·2	818·3	14·38	512·8	819·0
25	16·57	504·6	„	23·86	510·3	788·2	16·85	512·4	818·1	14·80	513·9	818·0
30	16·37	505·3	821·0	23·83	513·3	786·4	17·31	511·2	817·9	16·01	509·4	818·6
35	16·64	505·3	„	24·03	513·5	785·2	17·14	508·4	818·2	15·49	509·8	816·7
40	16·94	506·5	822·0	24·03	516·4	785·0	17·42	511·1	817·9	15·32	508·7	815·9
45	17·64	504·6	„	24·77	518·2	784·2	17·31	512·4	816·4	14·60	511·7	815·8
50	17·71	504·7	„	24·77	518·1	„	17·71	513·1	815·1	14·40	514·4	814·6
55	17·78	504·4	823·0	24·71	518·0	784·3	17·91	512·7	813·6	14·82	515·7	„

HOUR,	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10
BIFILAR THERMOMETER,	53·6	53·8	53·4	52·3	52·0	52·8	53·7	54·8	56·0	57·2	58·3	58·7	58·6	58·5	58·1	57·7	56·8
BALANCE THERMOMETER,	54·6	54·9	54·9	54·0	54·0	54·6	55·3	56·0	57·0	58·0	58·9	59·1	59·0	59·0	59·0	58·7	58·0
OBSERVER'S INITIAL,	H	H	H	H	B	B	B	B	H	C	C	C	C	D	W	B	

BIFILAR. Observed 2m after the Declination. $k=0·0001205$.
BALANCE. Observed 3m after the Declination. $k=0·000013$ approximately.

NOVEMBER 24, 25.

Göttingen Mean Time of Declination Observation.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		10^{h}.			14^{h}.			18^{h}.			22^{h}.	
0	25 16·71	523·0	858·6	25 17·59	520·6	847·9	25 17·81	522·2	848·3	25 18·46	516·2	837·8
5	16·75	523·9	857·3	17·86	521·9	847·2	17·88	522·5	846·9	18·52	516·3	,,
10	17·05	525·1	864·4	18·19	522·3	843·8	17·88	522·2	846·6	18·46	516·0	,,
15	17·14	526·1	863·0	18·52	521·9	,,	17·99	521·7	846·0	18·66	514·5	,,
20	17·14	525·0	860·5	18·92	521·6	843·2	17·88	521·5	845·4	18·35	515·6	,,
25	17·11	524·3	860·3	18·38	521·9	841·5	18·23	521·4	845·5	19·07	514·7	,,
30	17·15	523·2	858·5	18·28	522·0	,,	18·32	521·3	843·4	18·79	514·4	837·8
35	17·17	523·1	857·0	19·07	521·3	,,	18·18	522·0	842·9	19·26	514·1	,,
40	17·39	523·9	855·0	19·44	520·2	841·8	17·89	522·6	841·8	19·22	513·1	,,
45	17·67	524·2	854·1	19·33	521·0	,,	17·94	522·7	840·9	18·97	512·7	,,
50	17·81	524·4	851·4	19·22	521·0	839·4	17·64	523·8	840·4	19·61	512·7	,,
55	17·15	524·5	850·0	19·06	522·4	,,	17·88	522·8	,,	19·39	512·6	,,
		11^{h}.			15^{h}.			19^{h}.			23^{h}.	
0	25 17·39	524·5	850·3	25 20·23	523·0	835·4	25 17·91	522·9	840·3	25 19·60	512·8	839·1
5	17·20	523·7	848·3	18·92	523·6	837·3	17·88	522·6	,,	19·61	512·2	,,
10	16·67	523·2	846·9	18·62	522·9	,,	17·91	522·3	840·3	19·71	511·7	841·7
15	16·71	522·5	846·7	18·55	522·9	,,	18·03	521·6	839·3	19·70	512·6	840·4
20	16·51	521·9	851·4	18·62	522·6	836·7	18·28	521·4	838·8	20·14	513·1	842·6
25	16·40	521·4	851·3	18·55	522·8	,,	18·43	521·4	839·0	20·45	512·9	843·9
30	16·41	521·0	853·3	18·30	523·4	833·6	18·39	522·2	837·8	20·57	512·1	845·1
35	16·46	520·3	855·2	18·23	523·8	,,	18·55	521·8	,,	20·57	510·1	845·8
40	16·28	519·2	856·1	17·89	523·7	832·8	18·38	521·7	,,	20·50	511·2	,,
45	16·01	519·9	859·6	18·25	522·7	,,	18·41	521·4	837·3	20·70	510·7	846·6
50	16·40	519·7	861·6	18·25	521·8	834·2	18·12	521·7	836·8	20·60	510·3	847·3
55	16·40	519·8	860·8	17·62	522·7	,,	18·01	522·1	,,	20·57	511·3	,,
		12^{h}.			16^{h}.			20^{h}.			0^{h}.	
0	25 16·40	518·6	859·5	25 17·34	523·7	833·4	25 17·89	522·8	838·2	25 20·63	510·7	848·9
5	16·04	519·7	860·5	17·20	523·9	836·4	17·88	522·3	838·1	20·65	511·3	,,
10	16·06	518·8	861·6	16·97	524·0	,,	17·91	522·5	,,	20·61	511·2	,,
15	15·86	518·2	863·4	16·78	523·9	,,	17·92	522·6	838·6	20·81	511·8	851·1
20	16·01	518·4	,,	16·67	522·9	835·2	17·91	522·6	838·7	20·74	511·7	852·5
25	16·40	518·5	864·9	16·37	524·1	,,	18·26	522·1	840·1	20·84	511·7	,,
30	16·68	519·0	865·2	16·46	523·9	835·7	17·94	521·4	840·7	20·84	511·7	,,
35	17·07	518·8	866·4	16·85	523·8	,,	17·88	521·5	841·3	20·60	510·7	,,
40	17·09	519·1	865·4	17·09	523·4	836·0	17·81	521·5	842·2	20·84	512·2	'854·0
45	17·83	518·7	866·5	17·24	522·8	,,	17·89	522·2	841·6	20·90	513·0	,,
50	19·51	517·6	864·0	17·07	523·3	,,	18·10	521·6	842·0	21·02	512·1	,,
55	20·03	518·5	861·1	17·07	523·8	838·2	17·86	522·0	842·4	21·07	512·6	854·8
		13^{h}.			17^{h}.			21^{h}.			1^{h}.	
0	25 21·89	521·3	855·4	25 17·20	523·2	838·0	25 18·06	521·5	842·4	25 20·97	512·7	854·8
5	21·89	522·7	850·7	17·27	523·5	,,	18·01	520·8	842·3	21·07	513·0	856·5
10	21·88	522·2	846·7	17·44	522·6	,,	17·81	520·4	842·1	21·12	512·7	,,
15	21·08	521·9	840·9	17·20	523·0	844·4	17·85	520·2	842·5	20·87	512·1	857·4
20	19·65	521·3	837·4	17·22	523·2	,,	18·01	519·4	840·5	20·60	512·3	858·2
25	18·23	522·2	835·5	17·25	523·1	848·2	17·98	518·7	840·8	20·41	513·9	,,
30	17·27	522·3	833·2	17·20	523·3	848·5	18·01	517·9	840·2	20·74	514·2	857·6
35	16·68	522·2	,,	17·07	523·8	845·2	17·78	519·1	838·9	20·63	514·1	856·2
40	16·84	521·2	834·7	17·09	524·0	,,	18·15	518·1	837·8	20·54	514·8	,,
45	17·45	520·8	844·8	17·00	524·0	847·3	18·06	517·4	837·4	20·63	516·0	,,
50	17·74	520·4	,,	17·17	523·9	,,	17·88	517·3	837·4	20·63	515·6	,,
55	17·54	520·9	845·0	17·44	523·1	847·2	18·21	517·3	837·1	20·54	515·0	855·6

HOUR, ...	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1
BIFILAR THERMOMETER, . . .	51·4	52·8	53·0	53·2	54·3	55·2	55·7	55·6	55·3	55·8	55·8	55·5	55·6	55·0	54·7	54·4
BALANCE THERMOMETER, . .	52·2	53·0	53·5	54·0	55·9	56·3	57·0	56·7	57·0	57·5	57·5	57·3	57·0	57·0	56·5	56·5
OBSERVER'S INITIAL, ...	D	D	D	D	H	H	H	H	B	B	B	B	W	W	W	W

BIFILAR. Observed 2^{m} after the Declination. $k=0{\cdot}0001300$.
BALANCE. Observed 3^{m} after the Declination. $k=0{\cdot}000014$ approximately.

Göttingen Mean Time of Declination Observation.	November 24, 25.						December, 20, 21.					
	Declination.	Bifilar Corrected.	Balance Corrected.	Declination.	Bifilar Corrected.	Balance Corrected.	Declination.	Bifilar Corrected.	Balance Corrected.	Declination.	Bifilar Corrected.	Balance Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		2h.			6h.			10h.			14h.	
0	25 20·40	514·4	855·6	25 18·38	518·5	866·8	25 17·27	516·0	839·8	25 18·70	516·0	828·4
5	20·30	515·4	855·0	18·35	518·7	867·8	17·85	516·1	„	18·97	516·5	827·5
10	20·30	515·0	„	18·33	518·9	868·4	17·69	515·4	840·0	18·99	516·9	826·7
15	20·16	516·1	855·8	18·36	518·8	868·9	17·72	515·1	„	18·62	516·4	826·9
20	20·20	516·7	856·3	18·28	519·0	869·0	17·96	515·4	„	18·55	517·0	825·4
25	20·03	516·9	„	18·19	519·3	868·8	17·88	516·1	839·5	17·98	517·4	826·1
30	20·05	517·3	854·8	18·32	519·2	868·9	17·76	517·1	833·9	18·41	217·2	827·2
35	20·20	517·7	856·3	18·39	519·3	867·2	17·69	517·7	„	18·55	516·4	„
40	19·91	517·9	„	18·25	519·0	866·8	17·64	516·5	837·0	18·55	515·8	828·3
45	20·20	518·2	„	18·23	518·7	866·8	17·27	514·5	„	18·84	516·5	827·4
50	19·91	518·6	856·5	18·32	518·7	866·9	17·36	514·5	835·6	19·02	516·9	828·8
55	19·89	518·2	856·7	18·38	518·6	867·0	17·56	515·1	„	19·09	516·8	828·2
		3h.			7h.			11h.			15h.	
0	25 19·86	517·6	856·1	25 18·39	518·8	866·2	25 17·47	515·4	837·2	25 19·13	517·2	830·0
5	19·56	517·4	857·0	18·38	518·8	864·4	17·42	514·9	837·9	19·22	516·9	829·6
10	19·60	518·8	857·5	18·41	518·8	864·2	17·74	515·5	„	19·22	517·5	828·9
15	19·70	518·2	858·2	18·48	519·0	863·6	17·89	516·0	836·4	19·19	517·1	828·3
20	19·49	516·8	858·8	18·50	518·7	863·0	17·86	516·2	„	19·15	517·7	826·6
25	19·47	516·8	858·3	18·52	518·5	862·5	17·76	515·6	835·1	19·19	518·0	827·7
30	19·22	516·2	858·9	18·48	519·1	862·7	18·30	515·7	„	19·20	517·9	827·8
35	19·20	515·8	859·1	18·46	519·0	863·0	18·25	516·7	832·6	19·26	518·0	828·9
40	19·31	516·8	858·7	18·35	519·0	860·1	18·53	517·8	833·2	19·22	518·2	829·8
45	19·22	516·7	859·5	18·05	519·2	861·1	18·43	517·9	„	19·26	518·5	828·2
50	19·24	516·3	859·5	18·32	519·1	860·8	18·41	517·8	829·7	19·22	519·1	828·0
55	19·44	518·1	859·7	18·32	518·9	860·1	18·21	517·0	„	19·33	518·2	829·3
		4h.			8h.			12h.			16h.	
0	25 19·39	517·3	860·1	25 18·41	519·3	859·6	25 18·41	516·5	831·1	25 19·33	518·3	829·7
5	19·46	516·7	859·9	18·35	519·5	„	18·43	515·6	„	19·22	519·0	828·1
10	19·22	517·4	859·7	18·41	519·5	857·6	18·25	517·3	829·1	19·36	518·9	828·6
15	18·97	517·6	859·4	18·39	518·7	858·0	17·38	522·9	824·3	19·42	519·3	827·5
20	18·72	517·7	859·9	18·01	518·8	„	15·93	524·1	„	19·27	519·5	„
25	18·72	518·2	859·9	18·16	518·7	857·1	15·77	522·3	822·1	19·36	518·7	„
30	18·68	517·5	860·4	18·15	518·9	856·6	16·53	518·1	825·1	19·36	518·6	828·8
35	18·89	518·1	861·0	18·16	518·2	856·4	17·25	515·2	„	19·26	518·9	828·6
40	18·68	518·6	862·1	18·25	518·7	854·8	17·88	514·7	831·3	19·29	519·3	828·3
45	18·72	518·6	861·9	17·94	518·4	„	18·15	515·0	830·2	19·24	520·0	827·7
50	18·70	518·4	861·8	17·85	518·7	853·5	18·38	515·5	„	19·22	520·4	826·1
55	18·75	518·3	861·6	17·69	518·2	853·4	18·23	516·0	831·4	19·24	520·0	826·6
		5h.			9h.			13h.			17h.	
0	25 18·75	518·3	865·4	25 17·38	520·1	854·0	25 17·96	516·3	„	25 19·80	518·7	828·9
5	18·72	518·5	867·5	17·34	519·1	854·6	17·79	515·9	827·6	19·89	518·1	826·8
10	18·72	518·6	868·4	17·47	518·9	855·7	17·89	515·8	829·5	19·70	519·0	828·6
15	18·65	518·9	868·3	17·62	519·1	855·8	18·21	516·0	„	19·67	519·2	827·0
20	18·59	518·9	868·1	17·47	519·1	855·6	18·55	516·9	830·0	19·22	519·7	827·4
25	18·55	518·9	867·9	17·32	519·0	857·1	18·62	517·9	826·4	19·12	520·1	824·2
30	18·62	518·5	867·8	17·24	518·9	„	18·86	518·6	„	19·00	520·1	„
35	18·73	518·6	867·8	17·27	518·6	857·8	18·53	517·7	825·9	18·68	520·4	824·8
40	18·63	519·1	867·1	17·34	518·0	„	18·79	517·0	829·1	18·63	520·6	824·1
45	18·57	519·0	867·4	17·74	517·5	860·1	18·70	516·8	827·3	18·68	520·2	824·3
50	18·55	518·8	867·2	17·85	517·1	862·6	18·55	515·4	„	18·62	520·0	823·7
55	18·43	518·6	867·0	17·89	517·0	862·2	18·55	515·1	827·4	18·55	520·1	823·2

Hour, ...	2	3	4	5	6	7	8	9	10	10	11	12	13	14	15	16	17
Bifilar Thermometer, .	54·6	54·9	54·8	54·1	53·9	54·0	54·2	54·5	54·0	52·7	53·7	54·7	55·6	56·0	56·3	56·7	57·1
Balance Thermometer,	56·8	57·0	56·7	56·2	55·9	56·0	56·5	56·5	56·3	54·7	55·9	56·9	57·8	58·2	58·4	58·8	59·4
Observer's Initial, . .	H	C	C	C	C	B	D	W		H	H	H	H	B	B	B	B

Bifilar. Observed 2m after the Declination. $k=0·0001300$.
Balance. Observed 3m after the Declination. $k=0·000014$ approximately.

DECEMBER 20, 21.

Göttingen Mean Time of Declination Observation.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.	DECLINATION.	BIFILAR Corrected.	BALANCE Corrected.
Min.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.	° ′	Sc. Div.	Mic. Div.
		18^h.			22^h.			2^h.			6^h.	
0	25 18·53	520·4	824·6	25 17·27	516·2	834·5	25 20·88	517·7	840·7	25 20·63	516·5	841·2
5	18·55	520·6	825·0	17·31	516·0	,,	20·99	517·8	841·8	20·79	515·6	840·1
10	18·46	520·2	824·5	17·27	515·9	,,	20·94	517·8	,,	20·63	516·2	840·1
15	18·52	520·3	823·4	17·41	515·8	835·2	20·77	517·8	844·3	20·61	515·7	839·8
20	18·55	520·1	823·2	17·58	515·7	834·6	20·65	517·9	,,	20·61	514·7	840·0
25	18·63	520·2	823·8	17·64	515·9	834·3	20·77	518·2	842·7	20·55	513·9	,,
30	18·63	520·1	826·2	17·74	516·0	834·8	20·70	518·8	845·5	20·30	514·2	839·7
35	18·55	520·2	824·6	17·86	515·7	835·1	20·60	518·2	843·8	20·13	513·7	839·8
40	18·72	520·0	825·7	17·88	515·3	835·4	20·57	518·7	844·5	19·76	513·1	840·0
45	18·62	520·1	826·1	17·92	515·2	835·2	20·57	518·9	844·6	19·76	514·4	839·9
50	18·68	520·0	826·3	17·98	515·4	835·6	20·57	518·7	,,	19·81	514·3	,,
55	18·68	519·4	826·2	18·21	515·2	835·7	20·54	518·6	843·9	19·94	513·0	840·6
		19^h.			23^h.			3^h.			7^h.	
0	25 18·55	520·0	828·2	25 18·35	515·0	836·7	25 20·48	518·5	843·9	25 19·74	513·7	,,
5	18·57	520·1	830·6	18·41	515·5	838·1	20·43	518·5	,,	19·60	513·4	841·7
10	18·55	520·0	830·8	18·52	514·8	839·9	20·40	518·6	843·0	19·80	513·2	843·2
15	18·68	519·5	,,	18·68	514·7	840·3	20·25	518·7	,,	19·83	513·4	842·3
20	18·62	519·6	830·1	18·63	514·5	841·2	20·27	518·5	843·0	19·27	514·9	,,
25	18·62	519·6	830·7	18·70	514·7	841·4	20·25	518·9	,,	19·84	515·8	840·5
30	18·55	519·7	,,	18·79	514·6	842·3	20·30	519·0	843·1	19·89	515·2	840·1
35	18·55	519·3	830·5	19·07	514·6	843·3	20·38	518·3	,,	20·10	515·5	840·8
40	18·55	519·1	831·6	19·15	515·3	842·4	20·27	518·1	842·1	20·01	515·4	839·2
45	18·50	519·2	831·1	19·06	515·0	843·2	20·37	518·0	,,	19·83	516·3	835·7
50	18·35	519·2	832·2	19·36	514·1	844·3	20·38	518·3	,,	20·32	516·3	,,
55	18·35	519·2	831·1	19·06	514·3	843·5	20·43	518·5	841·3	19·86	516·1	834·6
		20^h.			0^h.			4^h.			8^h.	
0	25 18·41	518·7	831·1	25 19·22	513·7	,,	25 20·43	518·9	840·0	25 20·21	515·3	835·4
5	18·33	518·8	,,	19·36	514·1	,,	20·18	519·4	,,	19·83	514·9	835·3
10	18·16	518·7	832·5	19·33	514·0	843·0	20·07	518·9	840·1	19·83	514·5	835·4
15	18·01	518·4	830·8	19·36	513·9	842·1	19·98	518·1	,,	19·40	513·5	836·0
20	18·01	518·3	832·7	19·39	514·0	842·1	19·89	516·7	839·6	19·06	512·5	,,
25	18·01	518·3	831·4	19·65	514·0	840·3	19·86	516·8	839·9	18·50	514·1	833·5
30	18·01	518·3	832·1	19·42	514·0	,,	19·70	518·8	,,	18·13	514·5	833·4
35	18·01	518·0	,,	19·78	514·4	,,	19·67	519·9	838·7	17·83	513·4	834·1
40	17·92	518·1	,,	19·93	514·8	839·2	19·81	521·3	838·8	17·25	514·1	831·1
45	17·92	518·2	831·8	19·93	515·4	,,	19·89	519·7	840·4	17·22	515·1	830·1
50	17·88	518·0	831·9	20·38	515·7	,,	19·96	517·6	841·1	17·88	514·6	832·8
55	17·88	517·9	,,	20·67	515·5	838·6	19·86	517·3	,,	18·01	512·7	834·3
		21^h.			1^h.			5^h.			9^h.	
0	25 17·81	517·3	833·2	25 20·63	515·5	837·8	25 19·83	517·0	840·0	25 17·64	514·0	833·8
5	17·67	517·5	833·9	20·67	515·7	837·3	19·60	517·4	,,	17·67	515·0	831·0
10	17·67	517·6	832·7	20·70	515·6	838·0	19·29	517·6	841·1	17·54	514·9	830·6
15	17·56	517·3	834·2	20·70	515·7	,,	19·34	517·1	841·8	17·20	515·1	829·4
20	17·49	517·3	834·6	20·67	515·9	,,	19·24	518·2	,,	17·27	515·5	829·3
25	17·45	517·2	834·8	20·68	516·3	838·3	19·60	515·5	844·3	17·47	514·8	829·9
30	17·38	517·0	834·2	20·82	516·4	838·5	19·89	515·4	,,	17·29	514·8	831·2
35	17·32	516·8	834·4	20·75	516·6	,,	19·73	517·3	,,	17·34	514·7	830·6
40	17·27	516·7	833·9	20·97	517·3	839·0	19·83	518·0	842·1	17·34	514·2	829·2
45	17·27	516·8	834·3	21·08	516·8	840·2	20·03	517·7	,,	17·12	513·7	829·2
50	17·24	516·4	834·0	20·72	516·8	840·6	20·43	517·8	841·5	13·84	515·3	822·9
55	17·20	516·3	834·0	20·82	516·9	841·7	20·43	518·7	841·3	9·85	518·4	821·6

HOUR, ...	18	19	20	21	22	23	0	1	2	3	4	5	6	7	8	9	10
BIFILAR THERMOMETER, .	57·0	57·0	57·0	57·2	57·0	56·4	56·1	56·1	56·4	56·7	57·0	56·8	56·3	56·0	55·4	55·0	54·6
BALANCE THERMOMETER,	59·3	59·1	59·5	59·6	59·2	58·4	58·5	58·5	58·6	59·0	59·0	58·6	58·2	57·6	57·0	56·3	55·7
OBSERVER'S INITIAL, . .	D	D	D	W	W	W	W	W	H	H	B	B	D	D	D	W	

BIFILAR. Observed 2^m after the Declination. $k=0·0001300$.
BALANCE. Observed 3^m after the Declination. $k=0·000014$ approximately.

EXTRA OBSERVATIONS

OF

MAGNETOMETERS.

MAKERSTOUN OBSERVATORY,

1843.

Göttingen Mean Time.			DECLINATION.			BIFILAR.		BALANCE.	
			Min. of Obs.	Reading Reduced.		Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
	d.	h.	m.	°	′	m.	Sc. Div.	m.	Mic. Div.
Jan.	2	5	0	25	25·04	2	536·6	3	846·6
								34	880·0
			36		5·43	38	536·7	40	865·3
			42		6·37	44	554·6	46	856·2
			48		12·03	50	555·1	52	853·9
			54		18·95	56	540·0	58	853·9
Jan.	2	6	0		20·57	2	535·0	3	874·1
			6		20·77	8	532·3	10	845·4
			12		22·38	14	532·2	16	846·4
			18		25·88	20	531·4		
Jan.	11	8	0	25	23·01	2	527·0	3	834·4
			20		19·29	22	505·1	23	866·7
			25		15·19	27	516·1	28	871·2
			30		16·94	32	513·2	33	883·5
			35		13·30	37	512·5	38	895·2
			40		7·11	42	525·9	43	885·8
			45		9·34	47	535·9	48	875·8
			50		15·99	52	531·2	53	870·3
			55		20·43	57	527·4	58	863·5
Jan.	11	9	0		22·79	2	523·1	3	859·6
			5		23·26	7	521·9	8	855·7
			10		22·85	12	526·0	13	849·3
			15		23·19	17	530·0	18	840·6
			20		23·79	22	532·3	23	834·7
			25		24·67	27	532·9	28	828·1
			30		24·60	32	533·4	33	824·9
			35		24·53	37	534·2	38	825·8
Jan.	11	10	0		22·06	2	531·4	3	811·0
Jan.	28	6	0	25	26·66	2	526·5	3	859·4
			10		28·54	12	518·3	13	852·2
			15		27·80	17	515·1	18	846·7
			20		25·88	22	521·1	23	843·0
			25		27·19	27	519·3	28	843·9
			30		27·13	32	517·5	33	842·9
								38	842·1
			40		27·51	42	519·0		
Jan.	28	8	0		20·87	2	524·2	3	842·0
Feb.	6	8	0	25	21·04	2	532·1	3	806·8
			25		30·12	27	529·0	28	798·9
			30		28·35	32	526·4	33	798·6
			35		25·99	37	528·4	38	797·7
			40		22·11	42	534·2	43	794·9
			50		20·60	52	534·1	53	796·6
			55		19·65	57	530·4	58	800·3
Feb.	6	9	0		17·04	2	533·4	3	801·7
			5		16·55				
			10		18·01	12	528·9	13	804·5
			15		20·10				
			20	25	21·17				
			55	24	45·20	57	520·2	58	834·6
Feb.	6	10	0	24	44·31	2	538·7	3	830·1
			5	24	49·42	7	538·7	8	824·8
Feb.	6	10	10	24	56·48	12	534·5	13	819·1
			15	25	3·61	17	524·5	18	813·9
			20		6·77	22	514·5	23	808·7
			25		4·75	27	528·0	28	797·0
			30		9·47	32	529·5	33	792·1
			35		12·88	37	527·2	38	786·2
			40		14·28	42	532·0	43	780·2
			45		17·24	47	529·9	48	775·2
			50		19·33	52	525·7	53	774·8
			55		18·65	57	524·9	58	769·1
Feb.	6	11	0		18·43	2	524·9	3	768·6
			5		18·41				
Feb.	6	18	50		23·66	52	534·3	53	740·9
		19	0		23·79	2	536·8	3	736·6
Feb.	6	20	0		24·17	2	540·0	3	753·1
Feb.	13	10	0	25	8·17	2	531·1	3	770·0
			5		7·48	7	534·6	8	768·2
			10		7·91	12	536·7	13	765·8
			15		9·87	17	532·0	18	766·9
			20		10·34	22	526·4	23	769·2
			25		9·54	27	527·5	28	768·2
			30		9·27	32	532·4	33	766·3
			35		11·89	37	536·0	38	765·3
			40		14·38	42	537·9	43	764·7
			45		17·17	47	538·2	48	763·0
			50		19·49	52	539·6	53	763·7
			55		21·91	57	537·0	58	764·9
Feb.	13	11	0		22·65	2	534·8	3	763·4
			5		22·32				
Feb.	14	8	0	25	21·44	2	526·1	3	773·0
			9		15·29	11	526·1	12	775·7
			14		14·06	16	530·2	17	781·2
			19		16·53	21	530·8	22	782·7
			24		18·75	26	530·7	27	784·2
			29		21·17				
			39		21·91	41	521·7	42	774·4
			44		17·31	46	532·2	47	766·0
			49		11·62	51	543·0	52	757·1
			54		5·29	56	557·7	57	747·0
			59		7·38				
Feb.	14	9				1	565·8	2	742·7
			4		13·17	6	554·1	7	743·2
			9		13·95	11	550·7	12	739·4
			14		16·46	16	542·7	17	736·0
			19		15·69	21	532·4	22	737·3
			24		13·86	26	527·9	27	741·2
			29		12·36	31	530·0	32	743·1
			34		13·24	36	534·2	37	744·3
			39		17·14	41	531·6	42	746·3
			44		20·37	46	526·9	47	748·2
			49		21·31	51	523·0	52	754·4
			54		22·45	56	524·3	57	755·3
			59		22·67				

BIFILAR. $k=0·0001248$. BALANCE. $k=0·000015$ approximately.

	Feb. $6^{d}\ 9^{h}$	$6^{d}\ 11^{h}$	$13^{d}\ 11^{h}$
BIFILAR THERMOMETER.	53°·8	52°·7	51°·3
BALANCE THERMOMETER.	56°·0	54°·5	54°·0

For the readings of the Bifilar and Balance Thermometers at the hours of the Daily Observations, see the section containing these observations.

Göttingen Mean Time.	DECLINATION.		BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Feb. 14 10			1	522·9	2	756·9
	4	25 22·08	6	524·2	7	759·3
Feb. 16 6	0	25 27·34	2	542·0	3	756·1
Feb. 16 7	40	10·48	42	549·7	43	769·4
	45	12·36	47	548·3	48	771·7
	50	13·25	52	542·8	53	770·5
	55	12·40	57	544·5	58	768·0
Feb. 16 8	0	14·06	2	543·8	3	767·8
	5	17·44	7	536·7	8	769·8
	10	18·41	12	531·2	13	769·3
	15	17·34	17	529·8	18	769·0
	20	17·27	22	536·8	23	765·2
	25	18·15	27	534·3	28	766·8
	30	17·74	32	535·1	33	766·6
	35	17·51	37	536·0	38	761·4
Feb. 16 10	0	23·19	2	537·8	3	760·6
Feb. 23 18	0	25 21·24	2	544·1	3	725·2
	50	21·17	52	543·9	53	727·5
Feb. 23 20	0	21·51	2	543·9	3	723·0
Feb. 23 22	0	27·38	2	528·7	3	725·8
Feb. 24 0	0	32·27	2	539·1	3	727·8
Feb. 24 1	35	34·21	37	538·6	38	731·8
Feb. 24 2	0	34·68	2	538·6	3	735·9
	10	36·67	12	540·7	13	738·7
	15	36·95				
	25	38·62	27	536·4	28	742·8
	30	38·75	32	535·1	33	745·0
	35	38·72	37	531·4	38	746·5
	40	38·01	42	531·7	43	746·9
	45	38·18	47	534·5	48	749·2
Feb. 24 3	0	40·33	2	536·8	3	751·9
	5	40·68	7	540·6	8	753·5
	10	41·61	12	541·3	13	756·6
	15	42·95	17	543·5	18	757·4
	20	43·09	22	539·2	23	764·1
	25	42·43	27	539·9	28	768·9
	30	41·86	32	544·0	33	771·5
	35	42·65	37	544·0	38	775·8
	40	42·53	42	544·1	43	780·8
	45	41·02	47	546·4	48	782·4
	50	41·04	52	550·4	53	785·4
	55	41·39	57	537·9	58	791·1
Feb. 24 4	0	43·60	2	535·2	3	794·1
	5	43·68	7	530·4	8	796·6
	10	42·08	12	525·2	13	798·0
	15	41·00	17	526·8	18	795·5
	20	40·33	22	527·1	23	794·3
	25	38·01	27	534·0	28	792·1
	30	38·18	32	537·9	33	791·5
	35	37·81	37	546·5	38	789·8
	40	38·75	42	554·4	43	789·9
	45	40·65	47	558·7	48	791·6
	50	40·64	52	551·0	53	794·5
Feb. 24 4	55	25 41·41	57	547·7	58	796·1
Feb. 24 5	0	42·10	2	546·0	3	798·3
	5	41·12	7	539·2	8	800·5
	10	40·73	12	537·9		
	15	40·73	17	540·6	18	803·0
	20	41·18	22	533·0		
	25	40·77	27	530·5	28	811·2
	30	38·15	32	527·1	33	819·4
	35	36·63	37	528·4	38	827·5
	40	34·73	42	531·2	43	837·0
	45	33·34	47	533·1	48	853·0
	50	31·94	52	530·6	53	867·2
	55	30·68	57	534·0	58	870·7
Feb. 24 6	0	30·62	2	528·9	3	878·6
	5	28·20	7	526·3	8	879·3
	10	24·37	12	532·6	13	876·7
	15	22·67	17	536·6	18	872·0
	20	21·88	22	538·5	23	873·3
	25	21·44	27	534·4	28	876·8
	30	22·49	32	531·3	33	885·0
	35	22·22	37	527·3	38	889·2
	40	20·14	42	532·4	43	881·1
	45	19·20	47	537·9	48	871·7
	50	21·59	52	537·9	53	870·6
	55	23·29	57	541·7	58	873·6
Feb. 24 7	0	24·78	2	545·3	3	867·7
	5	28·08	7	544·5	8	868·2
	10	32·72	12	532·8	13	886·7
	15	30·42	17	533·5	18	896·1
	20	30·02	22	533·5	23	911·2
	25	27·58	27	532·2	28	905·6
	30	26·40	32	530·5	33	899·7
	35	26·66	37	531·2	38	891·8
	40	27·58	42	515·8	43	897·8
	45	24·82	47	528·9	48	901·4
	50	28·15	52	527·0	53	894·7
	55	27·38	57	529·3	58	889·6
Feb. 24 8	0	26·79	2	523·5	3	887·8
	5	22·79	7	527·1	8	878·1
	10	22·05	12	526·1	13	866·0
	15	23·06	17	521·4	18	856·4
	20	22·25	22	519·8	23	855·9
	25	20·10	27	519·1	28	853·5
	30	19·84	32	522·4	33	850·1
	35	19·68	37	521·0	38	850·0
	40	19·07	42	521·0	43	845·5
	45	18·08	47	524·9	48	833·9
	50	17·98	52	526·0	53	837·6
	55	18·26	57	528·9	58	830·7
Feb. 24 9	0	18·18	2	531·8	3	826·2
	5	19·61	7	532·6	8	821·2
	10	21·84	12	529·3	13	816·2
	15	23·16	17	525·9	18	811·1
	20	22·25	22	523·7	23	813·3
	25	21·89	27	525·7	28	807·7

BIFILAR. $k=0·0001248$. BALANCE. $k=0·000015$ approximately.

$\left.\begin{matrix}\text{BIFILAR THERMOMETER.}\\ \text{BALANCE THERMOMETER.}\end{matrix}\right\}$ Feb. $24^{d}\ 1^{h}\ 35^{m}$, $\left\{\begin{matrix}51^{\circ}{\cdot}1\\ 52^{\circ}{\cdot}5\end{matrix}\right.$; $24^{d}\ 3^{h}$, $\left\{\begin{matrix}51^{\circ}{\cdot}3\\ 52^{\circ}{\cdot}6\end{matrix}\right.$; $24^{d}\ 5^{h}$, $\left\{\begin{matrix}51^{\circ}{\cdot}8\\ 53^{\circ}{\cdot}1\end{matrix}\right.$; $24^{d}\ 7^{h}$, $\left\{\begin{matrix}52^{\circ}{\cdot}5\\ 54^{\circ}{\cdot}3\end{matrix}\right.$; $24^{d}\ 9^{h}$, $\left\{\begin{matrix}53^{\circ}{\cdot}1\\ 54^{\circ}{\cdot}8\end{matrix}\right.$.

Göttingen Mean Time.	Declination. Min. of Obs.	Declination. Reading Reduced.	Bifilar. Min. of Obs.	Bifilar. Reading Corrected.	Balance. Min. of Obs.	Balance. Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Feb. 24 9	30	25 21·53	32	526·5	33	806·9
	35	21·51	37	526·5	38	806·2
	40	20·57	42	527·0	43	804·8
	45	19·04	47	527·4	48	798·1
	50	18·41	52	527·4	53	800·0
	55	18·89	57	525·9	58	785·3
Feb. 24 10	0	20·16	2	527·0	3	783·2
Feb. 25 10	0	25 16·40	2	544·3	3	743·2
	5	9·84	7	559·0	8	736·4
	10	8·40	12	567·3	13	730·0
	15	10·32	17	563·3	18	730·9
	20	11·82	22	556·5	23	729·4
	25	13·17	27	549·0	28	731·5
	30	14 78	32	538·4	33	737·7
	35	16·89	37	523·9	38	742·3
	40	15·96	42	516·5	43	744·9
	45	18·92	47	508·3	48	751·2
	50	21·07	52	508·3	53	752·5
	55	21·89	57	511·0	58	752·3
Feb. 25 11	0	22 45	2	515·7	3	750·0
	5	23 23	7	519·4	8	744·5
	10	23·44	12	518·7	13	743·8
	15	21·98	17	522·5	18	742·3
	20	20 13	22	530·5	23	737·7
	25	19·27	27	535·1	28	737·7
	30	18 75	32	536·8	33	732·8
	35	18·46	37	536·0	38	732·8
	40	18·12	42	540·4	43	733·1
	45	19·26	47	541·9	48	732·2
	50	20·40	52	541·0	53	730·2
	55	20·87	57	539·5	58	729·7
Mar. 4 10	0	25 19·81	2	534·8	3	755·4
	5	21·19	7	532·3	8	756·4
	10	22·03	12	531·7	13	756·4
	20	19·70	22	537·2	23	744·9
	25	17·34	27	541·8	28	735·4
	30	14·35	32	542·3	33	729·1
	35	13·81	37	532·1	38	730·3
	40	13·07	42	530·9	43	732·2
	45	14·28	47	535·2	48	728·8
	50	18·12	52	537·4	53	728·2
	55	22·25	57	534·8	58	726·5
Mar. 4 11	0	23·23	2	530·3	3	725·4
	15	21·17	17	532·7	18	724·1
	20	20·43	22	531·7	23	723·5
	30	18·79	32	527·7	33	734·2
	40	19·07	42	525·8	43	740·9
	50	19·09	52	533·3	53	741·1
Mar. 4 12	0	19·96	2	532·4	3	745·0
Mar. 5 18	0	25 22·96	2	528·4	3	729·4
	30	25 54	32	531·8	33	719·2
Mar. 5 20	0	30·37	2	537·3	3	712·2

Göttingen Mean Time.	Declination. Min. of Obs.	Declination. Reading Reduced.	Bifilar. Min. of Obs.	Bifilar. Reading Corrected.	Balance. Min. of Obs.	Balance. Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Mar. 6 6	0	25 28·10	2	535·1	3	740·6
	15	26·28	17	526·3	18	751·5
	20	24·11	22	531·9	23	753·8
	25	22·82	27	538·3	28	754·2
	30	22·92	32	541·8	33	754·4
	35	23·29	37	540·4	38	754·8
	40	22·06	42	541·0	43	755·4
	45	21·21	47	540·0	48	755·5
	50	19·71	52	541.5	53	757·8
	55	19·54				
Mar. 6 7	0	20·08	2	543·4	3	757·6
	15	23·41	17	540 4	18	759·8
	25	21·32	27	538·4	28	759·0
	30	22 25				
Mar. 6 8	0	25·75	2	542·3	3	760·4
	15	26·62	17	536·7	18	762·2
	30	25·92	32	533·8	33	765·4
	45	26·53	47	535·7	48	765·0
Mar. 6 9	0	23·03	2	539·4	3	759·5
	10	19·19	12	544·5	13	758·0
	15	14·29	17	544·9	18	758·1
	20	10·73	22	552·2	23	751·0
	25	13·91	27	555·1	28	741·5
	30	17·98	32	545·1	33	737·0
	35	16·64	37	538·7	38	734·6
	40	15·20	42	544·5	43	733·2
	45	14·65	47	549·8	48	728·2
	50	16·10	52	544·4	53	728·7
	55	15·86	57	542·2	58	729·4
Mar. 6 10	0	15·23	2	536·4	3	726·1
	5	15·52	7	532·0	8	728·1
	10	14·51	12	525·8	13	725·3
	15	13·32	17	526·9	18	715·5
	20	16·10	22	518·6	23	707·7
	25	18·99	27	507·5	28	704·4
	30	15·32	32	514·0	33	703·4
	35	15·86	37	523·0	38	694·4
	40	18·32	42	528·4	43	696·6
	45	20·00	47	534·2	48	699·6
	50	19·71	52	525·5	53	699·9
	55	15·70	57	529·0	58	700·6
Mar. 6 11	0	12·51	2	527·1	3	694·0
	5	9·49	7	530·2	8	678·9
	10	8·23	12	519·1	13	667·0
	15	6·45	17	513·9	18	664·8
	20	4·45	22	522·7	23	670·6
	25	4·08	27	522·7	28	672·7
	30	5·70	32	520·2	33	676·6
	35	7·08	37	517·0	38	675·4
	40	7·26	42	514·1	43	677·4
	45	7·08	47	512·3	48	681·9
	50	7·55	52	517·7	53	687·8
	55	8·98	57	522·2	58	695·9
Mar. 6 12	0	10·92	2	524·6	3	702·6
	5	12·58	7	524·5	8	703·9

BIFILAR. $k=0·0001248$. BALANCE. $k=0·000015$ approximately.

BIFILAR THERMOMETER.
BALANCE THERMOMETER.
Feb. 25^d 10^h—12^h, $\left\{\begin{matrix}53°·0\\54°·7\end{matrix}\right.$. March 4^d 11^h, $\left\{\begin{matrix}50°·7\\52°·0\end{matrix}\right.$; 6^d 11^h, $\left\{\begin{matrix}55°·8\\57°·2\end{matrix}\right.$; 6^d 12^h, $\left\{\begin{matrix}56°·6\\58°·0\end{matrix}\right.$.

Feb. 24^d 10^h. For the continuation of these observations, see the *Term Observations*.
Feb. 25^d 10^h. Continued from the Term Observations.

Göttingen Mean Time.	DECLINATION.		BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
h. d.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Mar. 6 12	10	25 13·95	12	521·2	13	702·7
	15	14·48	17	521·7	18	702·3
	30	18·13	32	515·3	33	704·5
			42	507·0	43	685·3
	45	24·80	47	505·6	48	663·9
	50	27·46	52	505·1	53	640·4
	55	27·16	57	522·9	58	636·1
Mar. 6 13	0	26·01	2	525·5	3	635·5
	5	26·19	7	518·5	8	632·1
	10	25·43	12	509·6	13	620·3
	15	23·70	17	503·4	18	617·2
	20	19·87	22	506·5	23	623·0
	25	16·40	27	521·6	28	626·8
			33	563·8		
	35	25·22	37	550·1	38	645·0
	40	33·49	42	543·4	43	639·1
	45	32·65	47	532·1	48	637·8
	50	29·75	52	526·1	53	641·8
	55	20·54	57	534·1	58	651·4
Mar. 6 14	0	12·16	2	540·9	3	659·8
	5	8·43	7	546·4	8	658·3
	10	7·58	12	548·5	13	652·1
	15	9·67	17	540·5	18	648·2
	20	11·02	22	537·3	23	650·9
	25	11·98	27	536·0	28	645·7
	30	14·58	32	531·9	33	638·6
	35	15·52	37	526·7	38	633·2
	40	15·25	42	523·9	43	630·3
	45	14·29	47	519·8	48	622·7
	50	12·16	52	519·8	53	617·8
	55	11·15	57	516·3	58	614·4
Mar. 6 15	0	9·82	2	516·5	3	613·9
	5	9·74	7	514·4	8	614·7
	10	9·81	12	513·9	13	616·6
	15	10·52	17	513·0	18	619·9
	20	11·19	22	512·2	23	621·5
	25	11·80	27	515·0	28	626·9
	30	13·10	32	512·3	33	629·7
	35	13·79	37	513·7	38	630·1
	40	14·01	42	515·8	43	631·4
	45	13·15	47	515·8	48	632·1
	50	13·24				
Mar. 6 16	0	14·45	2	514·5	3	634·5
	5	15·76	7	511·6	8	632·8
	10	16·53	12	509·2	13	627·4
	15	18·52	17	508·5	18	622·3
	20	20·16	22	504·2	23	619·3
	25	22·38	27	503·0	28	614·4
	30	23·39	32	501·9	33	604·8
	35	24·29	37	494·5	38	605·7
	40	27·90	42	495·0	43	607·2
	45	31·14	47	502·6	48	597·6
	50	30·32	52	503·8	53	584·1
	55	27·94	57	507·6	58	583·0
Mar. 6 17	0	25·56	2	511·5	3	579·2
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Mar. 6 17	5	25 23·59	7	517·1	8	580·6
	10	21·84	12	521·7	13	587·5
	15	19·89	17	522·9	18	595·9
	20	18·68	22	521·9	23	601·7
	25	17·11	27	521·6	28	608·9
	30	16·91	32	518·4	33	617·6
	35	16·85	37	517·2	38	625·6
	40	17·20	42	519·6	43	635·6
	45	17·07	47	521·9	48	647·7
	50	17·45	52	526·1	53	654·7
	55	17·98	57	526·7	58	659·5
Mar. 6 18	0	17·61	2	525·4	3	661·6
	5	16·67	7	528·8	8	663·8
	10	16·84	12	528·5	13	668·4
	15	17·20	17	528·3	18	671·3
	20	17·71	22	527·7	23	670·5
	25	17·72	27	529·2	28	672·8
	30	18·65	32	530·3	33	674·6
	35	19·87	37	527·8	38	677·4
	40	20·58	42	526·5	43	684·4
	45	21·51	47	527·9	48	688·0
	50	22·77	52	521·7	53	690·0
	55	23·12	57	526·5	58	692·2
Mar. 6 19	0	23·04	2	528·3	3	697·0
	5	23·86	7	527·7	8	700·9
	10	24·74	12	525·1	13	703·7
	15	24·53	17	526·1	18	705·3
	20	24·60	22	527·8	23	705·6
	25	24·40	27	530·9	28	705·7
	30	24·30	32	532·6	33	702·8
	50	25·75	52	531·7	53	702·0
	55	26·01	57	530·2	58	703·7
Mar. 6 20	0	25·90	2	530·5	3	705·4
	25	23·53	27	528·5	28	712·5
	30	23·16	32	529·3	33	714·1
	40	22·03	42	531·5	43	715·2
	50	21·91	52	532·9	53	717·5
Mar. 6 21	0	22·00	2	531·8	3	718·8
	20	22·08	22	527·6	23	721·1
	25	21·79	27	528·8	28	722·0
	30	23·14	32	528·9	33	724·0
	50	23·93	52	528·6	53	721·3
Mar. 6 22	0	24·22	2	527·7	3	721·1
Mar. 6 23	5	28·59	7	514·3	8	737·5
	10	28·72	12	513·4	13	737·8
	20	29·31	22	518·2	23	737·8
	30	30·40	32	514·8	33	737·8
	40	29·78	42	517·8	43	737·8
Mar. 7 0	0	25 30·05	2	521·5	3	739·7
Mar. 7 1	20	35·35				
Mar. 7 2	0	31·33	2	536·4	3	759·5
	35	33·92	37	530·6	38	765·9
Mar. 7 3	40	36·70	42	538·4	43	791·2
	45	35·53	47	539·5	48	792·2

BIFILAR. $k=0{\cdot}0001248$.

BALANCE. $k=0{\cdot}000015$ approximately.

BIFILAR THERMOMETER. BALANCE THERMOMETER. } March $6^{d}\ 14^{h}$, $\begin{cases}56^{\circ}{\cdot}0\\57^{\circ}{\cdot}5\end{cases}$; $6^{d}\ 15^{h}$, $\begin{cases}55^{\circ}{\cdot}5\\57^{\circ}{\cdot}5\end{cases}$; $6^{d}\ 16^{h}$, $\begin{cases}55^{\circ}{\cdot}1\\57^{\circ}{\cdot}4\end{cases}$; $6^{d}\ 17^{h}$, $\begin{cases}55^{\circ}{\cdot}1\\57^{\circ}{\cdot}6\end{cases}$; $6^{d}\ 18^{h}$, $\begin{cases}55^{\circ}{\cdot}2\\58^{\circ}{\cdot}0\end{cases}$; $6^{d}\ 19^{h}$, $\begin{cases}55^{\circ}{\cdot}6\\58^{\circ}{\cdot}0\end{cases}$; $6^{d}\ 20^{h}$, $\begin{cases}56^{\circ}{\cdot}0\\58^{\circ}{\cdot}5\end{cases}$.

March $6^{d}\ 14^{h}$. Auroral light seen through the clouds to NNW.

EXTRA OBSERVATIONS OF MAGNETOMETERS, MARCH 7—12. 1843.

Göttingen Mean Time.	Declination.		Bifilar.		Balance.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Mar. 7 4	0	25 39·46	2	547·4	3	803·5
	10	38·18	12	549·6	13	813·6
	15	36·65	17	548·6	18	820·5
	20	36·70	22	548·4	23	830·2
	25	34·65	27	543·9	28	834·3
	30	31·09	32	551·0	33	830·6
	35	31·73	37	560·7	38	831·0
	40	32·75	42	551·2	43	830·5
	45	32·17	47	543·9	48	832·9
	50	33·67	52	547·2	53	838·8
	55	35·32	57	555·9	58	846·5
Mar. 7 5	0	36·13	2	546·7	3	875·3
	5	32·38	7	545·2	8	888·6
	10	29·24	12	543·7	13	901·8
	15	24·40	17	536·2	18	908·4
	20	18·72	22	540·4	23	897·3
	25	16·15	27	549·4	28	885·3
	30	20·16	32	548·8	33	880·2
	35	24·03	37	548·0	38	881·9
	40	30·03	42	527·5	43	905·3
	45	17·18	47	547·6	48	895·6
	50	20·40	52	551·1	53	884·9
	55	27·06	57	550·9	58	884·7
Mar. 7 6	0	29·80	2	546·8	3	887·8
	5	31·59	7	540·9	8	891·9
	10	26·46	12	553·8	13	888·2
	15	31·64	17	549·7	18	894·1
	20	29·95	22	551·9	23	883·7
	25	35·27	27	545·5	28	896·6
	30	32·38	32	539·5	33	902·0
	35	30·07	37	550·3	38	900·0
	40	31·38	42	541·2	43	909·5
	45	28·01	47	548·5	48	908·3
	50	29·75	52	550·4	53	914·0
	55	30·20	57	553·7	58	914·6
Mar. 7 7	0	31·59	2	548·3	3	923·5
	5	29·66	7	541·9	8	924·4
	10	26·55	12	551·4	13	921·0
	15	28·64	17	545·7	18	921·5
	20	27·93	22	548·2	23	917·6
	25	29·65	27	555·3	28	922·6
	30	33·31	32	551·7	33	935·9
	35	32·05	37	550·7	38	953·1
	40	32·13	42	555·9	43	975·1
	45	34·28	47	548·6	48	995·1
	50	37·14	52	538·9	53	004·1
	55	38·82	57	520·6	58	1016·8
Mar. 7 8	0	32·40	2	513·5	3	1028·2
	5	24·24	7	510·7	8	1012·1
	10	18·08	12	512·6	13	1976·7
	15	15·56	17	523·3	18	951·2
	20	18·66	22	526·4	23	934·1
	25	22·00	27	524·4	28	925·7
	30	23·37	32	522·8	33	917·6
	35	23·23	37	526·5	38	902·0

Göttingen Mean Time.	Declination.		Bifilar.		Balance.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Mar. 7 8	40	25 24·13	42	527·8	43	895·2
	45	25·14	47	528·0	48	883·9
	50	25·09	52	528·5	53	875·8
	55	25·27	57	529·1	58	869·2
Mar. 7 9	0	26·03	2	526·8	3	864·7
	5	26·13	7	524·7	8	858 0
	10	25·05	12	528·0	13	851·8
	15	25·31	17	529·3	18	848·6
	20	26·52	22	523·5	23	844·1
	25	26·19	27	522·3	28	842·2
	30	25·52	32	527·7	33	834·8
			37	531·2	38	826·0
Mar. 7 10	0	25·83	2	528·6	3	813·1
Mar. 9 6	0	25 25·73	2	540·5	3	750·3
	15	25·76	17	542·7	18	761·7
	25	24·20	27	526·8	28	770·9
	30	22·89	32	524·0	33	775·4
	40	22·69	42	529·2	43	779·8
Mar. 9 7	0	21·91	2	523·1	3	783·8
	15	22·11	17	534·8	18	775·2
Mar. 9 8	0	25·92	2	533·9	3	760·5
Mar. 10 8	0	25 24·74	2	538·9	9	733·3
	25	21·10	27	561·8	28	725·1
	30	24·42	32	552·5	33	728·0
	35	24·96	37	541·4	38	729·6
Mar. 10 9	0	21·61	2	539·9	3	728·7
Mar. 10 10	0	23·07	2	537·0	3	736·6
Mar. 11 8	0	25 21·81	2	546·3	3	725·4
	30	17·94	32	553·9	33	716·2
	35	17·85	37	550·9	38	714·7
	45	17·14	47	545·1	48	715·4
	55	16·75	57	542·0	58	712·3
Mar. 11 9	10	17·22	12	527·0	13	719·7
	20	18·05	22	520·7	23	728·2
	25	17·38	27	517·9	28	730·8
	30	15·90	32	518·5	33	728·9
	35	14·48	37	521·1	38	731·0
	40	13·81	42	523·3	43	731·2
	50	14·98	52	526·7	53	735·6
Mar. 11 10	0	17·69	2	529·8	3	735·5
	10	19·81	12	532·4	13	733·4
Mar. 12 5	30	25 26·00	30	560·0	30	794·0
Mar. 12 7	3	25 25·00				
	16	24 45·00	15	555·0		1070·0
Mar. 12 9	25	25 18·00	27	518·0	28	778·0
Mar. 12 12					53	541·9
	55	25 20·13	57	544·3	58	546·3
Mar. 12 13	0	23·50	2	550·7	3	553·5
	5	25·61	7	540·9	8	554·8

BIFILAR. $k=0{\cdot}0001248$.   BALANCE. $k=0{\cdot}000015$ approximately.

BIFILAR THERMOMETER. } March 12ᵈ 13ʰ, { 51°·3
BALANCE THERMOMETER. }   { 52°·7

March 7ᵈ 8ʰ. Auroral arch spanning 90° of horizon; altitude of apex in the magnetic meridian 10°; breadth of the belt 8°; no pencils visible.

March 12ᵈ 5ʰ 30ᵐ. (Sunday.) A slight disturbance was observed, and a few observations, given above, were made; it was noted that the disturbance had increased very much at 7ʰ; continuous observations were commenced on Monday morning.

March 12ᵈ 13ʰ. Faint auroral light; stronger four hours ago.

Göttingen Mean Time.	DECLINATION.		BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Mar. 12 13	10	25 29·68	12	524·6	13	544·3
	15	29·21	17	512·9	18	533·0
	20	29·14	22	503·8	23	510·3
	25	30·02	27	489·6	28	495·5
	30	27·67	32	488·4	33	493·9
	35	24·77	37	499·7	38	493·3
	40	24·71	42	497·7	43	501·3
	45	21·58	47	508·7	48	520·7
	50	19·36	52	519·1	53	535·3
	55	19·49	57	528·1	58	547·4
Mar. 12 14	0	21·91	2	523·8	3	557·5
	5	23·09	7	526·9	8	571·3
	10	23·12	12	534·1	13	580·6
	15	22·89	17	523·0	18	592·9
	20	22·18	22	524·4	23	603·4
			27	519·9	28	613·0
			32	514·5	33	619·6
	35	22·42	37	516·4	38	629·3
	40	22·02	42	515·0	43	634·2
	45	21·37	47	517·5	48	636·6
	50	20·87	52	520·1	53	636·7
	55	20·13	57	525·5	58	635·6
Mar. 12 15	0	20·94	2	526·2	3	631·6
	5	21·78	7	526·7	8	630·6
	10	22·05	12	526·7	13	626·2
	15	22·65	17	527·6	18	623·1
	20	22·99	27	531·0	28	618·9
	30	22·99				
Mar. 12 16			12	520·2	13	658·3
	15	21·07	17	520·2	18	657·5
	20	20·84	22	522·1	23	660·5
	30	20·37	32	525·7	33	668·8
	35	20·34	37	525·6	38	673·2
Mar. 12 18	0	22·25	2	527·7	3	699·5
Mar. 14 4	0	25 26·73	2	534·6	3	724·4
Mar. 14 5			17	524·4	18	752·5
	20	17·71				
	30	20·60	32	529·3	33	755·7
	35	21·17	37	529·8	38	754·6
Mar. 14 6	0	23·86	2	534·9	3	745·3
Mar. 18 0	0	25 31·14	2	527·1	3	701·9
Mar. 18 1	35	34·36	37	539·5	38	700·6
	40	34·85	42	536·9	43	702·9
	50	34·48	52	535·2	53	704·2
Mar. 18 2	0	34·26	2	539·3	3	701·2
			33	559·0		
	35	25·59	37	549·4	38	703·6
	50	36·21	52	552·3	53	707·4
	55	35·59	57	547·7	58	708·4
Mar. 18 3	0	35·20	2	549·6	3	711·4
	20	36·63	22	553·0	23	717·4
	30	37·28	32	552·2	33	720·0
	40	36·97	42	544·3	43	724·7
Mar. 18 3	45	25 36·27	47	542·2	48	727·4
	50	36·09	52	534·3	53	732·3
	55	35·56	57	533·4	58	733·4
Mar. 18 4	0	35·47	2	535·8	3	733·2
	10	35·74	12	541·8	13	733·6
Mar. 18 5	53	26·60	57	541·0	58	781·0
Mar. 18 6	0	13·91	2	559·9	3	780·0
	5	15·25	7	572·6	8	772·0
	10	22·11	12	564·8	13	769·3
	15	25·96	17	553·0	18	769·3
	20	26·06	22	544·2	23	768·3
	25	26·46	27	547·3	28	766·3
	30	28·05	32	537·7	33	768·8
	35	25·72	37	531·1	38	768·8
	40	22·97	42	537·3		
	45	24·24	47	535·2		
	50	24·53	52	530·4	53	771·2
	55	23·06	57	531·2	58	768·7
Mar. 18 7	0	22·67	2	535·8	3	766·7
	5	24·27	7	535·9	8	766·7
	10	26·25	12	534·3		
	15	26·96	17	531·0	18	761·1
	20	26·55	22	530·9		
Mar. 18 8	0	24·82	2	535·5	3	748·3
Mar. 20 10	0	25 19·15	2	531·9	3	712·6
	5	17·61	7	533·5	8	712·3
	15	16·58	17	533·2	18	713·8
	20	16·08				
Mar. 20 11	5	21·71	7	526·2	8	701·8
	10	21·37	12	527·4	13	702·1
Mar. 21 8	0	25 24·58	2	545·6	3	711·4
			18	557·7		
	20	26·01	22	560·9	23	699·3
	25	25·76	27	556·9	28	696·0
	30	24·96	32	547·7	33	696·6
	35	21·98	37	540·4	38	695·5
	40	20·54	42	536·6	43	700·0
	45	18·06	47	535·4	48	702·5
	50	16·08	52	538·1	53	706·0
	55	15·16	57	539·1	58	706·9
Mar. 21 9	0	14·92	2	541·2	3	706·8
	5	15·83	7	542·0		
	20	20·63				
Mar. 21 10	0	24·22	2	536·2	3	707·3
Mar. 21 13	0	23·79	2	536·3	3	698·6
Mar. 21 14	0	23·84	2	540·9	3	691·6
Mar. 21 15	0	22·35	2	535·7	3	693·8
Mar. 21 16	0	21·95	2	538·8	3	693·7
Mar. 21 17	0	21·64	2	538·0	3	691·0
Mar. 21 18	0	23·32	2	542·4	3	690·2
Mar. 21 19	0	24·60	2	537·9	3	690·7
Mar. 21 20	0	22·72	2	536·7	3	694·7
Mar. 21 22	0	22·23	2	532·5	3	694·0

BIFILAR. $k=0\cdot0001248$. BALANCE. $k=0\cdot000015$ approximately.

BIFILAR THERMOMETER.
BALANCE THERMOMETER. } March $12^{d}\ 14^{h}$, $\begin{cases}51^{\circ}\cdot4\\53^{\circ}\cdot8\end{cases}$; $12^{d}\ 15^{h}$, $\begin{cases}51^{\circ}\cdot2\\54^{\circ}\cdot0\end{cases}$; $12^{d}\ 16\frac{1}{2}^{h}$, $\begin{cases}50^{\circ}\cdot7\\52^{\circ}\cdot6\end{cases}$; $18^{d}\ 3^{h}$, $\begin{cases}51^{\circ}\cdot9\\50^{\circ}\cdot5\end{cases}$; $18^{d}\ 7^{h}$, $\begin{cases}53^{\circ}\cdot5\\52^{\circ}\cdot5\end{cases}$; $21^{d}\ 9^{h}$, $\begin{cases}50^{\circ}\cdot9\\50^{\circ}\cdot5\end{cases}$; $21^{d}\ 13^{h}$, $\begin{cases}48^{\circ}\cdot8\\49^{\circ}\cdot0\end{cases}$; $21^{d}\ 14^{h}$, $\begin{cases}48^{\circ}\cdot6\\48^{\circ}\cdot8\end{cases}$; $21^{d}\ 15^{h}$, $\begin{cases}48^{\circ}\cdot2\\48^{\circ}\cdot5\end{cases}$; $21^{d}\ 16^{h}$, $\begin{cases}48^{\circ}\cdot0\\48^{\circ}\cdot4\end{cases}$; $21^{d}\ 17^{h}$, $\begin{cases}47^{\circ}\cdot7\\48^{\circ}\cdot0\end{cases}$; $21^{d}\ 19^{h}$, $\begin{cases}47^{\circ}\cdot4\\47^{\circ}\cdot9\end{cases}$.

March $21^{d}\ 13^{h}$—17^{h}. Hourly observations made during the Meteorological Term.

Göttingen Mean Time.	Declination. Min. of Obs.	Declination. Reading Reduced.	Bifilar. Min. of Obs.	Bifilar. Reading Corrected.	Balance. Min. of Obs.	Balance. Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Mar. 21 23	0	25 25·95	2	528·4	3	694·1
Mar. 22 0	0	25 30·43	2	527·0	3	688·4
	5	28·97	7	520·5	8	690·8
	25	29·31	27	527·5	28	687·9
	40	29·80	42	536·5	43	682·1
	45	30·18	47	536·9	48	682·9
Mar. 22 1	40	34·09	42	544·9	43	682·9
	45	35·08	47	545·6	48	683·9
Mar. 22 2	0	35·67	2	548·3	3	685·8
	20	34·48	22	544·6	23	692·5
	30	36·51	32	558·0	33	691·9
	35	36·95	37	554·0	38	691·2
	40	35·15	42	544·9	43	699·0
	45	34·85	47	540·9	48	700·1
	50	34·73	52	535·4	53	703·8
	55	35·77	57	530·9	58	706·2
Mar. 22 3	0	36·16	2	525·9	3	711·5
	5	35·46	7	522·6	8	711·2
	10	35·05	12	526·0	13	710·1
	30	34·79	32	538·6	33	710·5
	40	33·92	42	538·5	43	711·9
Mar. 22 4	0	32·28	2	542·9	3	714·5
Mar. 29 6	0	25 27·38	2	544·4	3	725·3
Mar. 29 7	15	19·24	17	551·0	18	809·1
	20	17·58	22	555·5	23	835·3
	25	14·62	27	551·4	28	856·6
	30	12·40	32	544·2	33	844·3
	35	11·15	37	545·0	38	788·8
	40	17·24	42	540·9	43	785·8
	45	18·95	47	543·6	48	803·1
	50	17·79	52	543·6	53	788·1
	55	22·35	57	537·4	58	777·5
Mar. 29 8	0	19·42	2	538·4	3	747·5
	5	23·79	7	522·3	8	720·7
	10	23·68	12	518·1	13	755·9
	15	15·49	17	532·9	18	746·9
	20	15·30	22	537·2	23	747·0
	25	15·46	27	535·9	28	733·5
	30	16·30	32	534·9	33	716·2
	35	19·04	37	536·8	38	702·6
	40	20·05	42	538·1	43	691·4
	45	21·82	47	529·0	48	696·8
	50	18·95	52	531·6	53	704·7
Mar. 29 9	0	17·14	2	534·1	3	719·3
	5	16·53	7	531·4	8	722·7
	10	13·21	12	533·9	13	724·1
	15	13·03	17	537·3	18	721·0
	20	12·36	22	537·3	23	710·7
	25	14·03	27	530·9	28	702·5
	30	14·83	32	527·0	33	691·9
	35	14·06	37	529·2	38	687·9
	45	13·34	47	522·8	48	670·3
	50	12·94	52	522·4	53	667·2
Mar. 29 9	55	25 13·34	57	524·3	58	666·9
Mar. 29 10	0	6·44	2	550·5	3	678·9
	5	1·59	7	547·7	8	666·5
	10	1·63	12	547·3	13	625·3
	15	3·79	17	555·5	18	600·6
	20	10·11	22	554·6	23	587·6
	25	14·78	27	540·1	28	579·5
	30	17·00	32	526·1		
	40	17·00	42	505·9	43	589·7
	45	11·93	47	507·9	48	614·4
	50	5·56	52	517·2	53	627·7
	55	2·17	57	524·0	58	635·1
Mar. 29 11	0	1·09	2	532·0	3	640·6
	5	1·98				
	10	5·70	12	529·8	13	644·5
	15	8·37	17	524·7	18	650·0
	20	8·55	22	528·2	23	654·9
	25	8·80	27	532·4	28	654·2
	30	9·98				
	45	13·03	47	533·3	48	650·2
	50	13·30	52	532·7	53	652·2
	55	13·62	57	533·7	58	658·8
Mar. 29 12	0	13·84	2	533·9	3	653·1
	5	14·65	7	536·8	8	653·1
	10	15·19	12	537·1	13	653·1
	15	15·52			18	653·0
	20	15·99	22	538·2	23	652·1
Apr. 5 2	0½	25 36·06	2½	549·5	3½	657·7
	25½	31·32	27½	524·0	28½	682·7
	30½	31·64	32½	526·2	33½	684·8
Apr. 5 3	25½	32·22	27½	550·8	28½	712·7
	30½	31·97	32½	550·1	33½	714·7
	45½	37·10	47½	542·8	48½	729·3
	50½	35·53	52½	549·1	53½	731·3
	55½	33·99	57½	555·3	58½	734·2
Apr. 5 4	0½	34·55	2½	555·9	3½	737·7
	5½	36·13	7½	557·1	8½	742·8
	10½	36·31	12½	564·4	13½	743·5
	15½	37·51	17½	562·5	18½	743·6
	20½	37·41	22½	577·7	23½	749·8
	25½	41·54	27½	572·0	28½	760·7
	30½	42·26	32½	563·0	33½	770·1
	35½	38·60	37½	583·3	38½	772·1
	40½	42·60	42½	580·1	43½	793·3
	45½	43·17	47½	585·8	48½	804·5
	50½	44·50	52½	580·9	53½	830·3
	55½	45·75	57½	579·4	58½	882·5
Apr. 5 5	0½	38·89	2½	604·4	3½	975·0
	5½	36·80	6½	628·6		
			7½	647·	8½	1049·9
	10½	27·29	11½	662·		
			12½	671·	13½	1124·4
					14½	1137·3
	15½	20·23	17½	697· ?	18½	1202·0

BIFILAR. $k=0{\cdot}0001248$. BALANCE. $k=0{\cdot}000015$ approximately.

BIFILAR THERMOMETER. / BALANCE THERMOMETER. March $21^d\ 23^h$, $\left\{\begin{array}{l}47^{\circ}{\cdot}7\\47^{\circ}{\cdot}9\end{array}\right.$; $22^d\ 3^h$, $\left\{\begin{array}{l}53^{\circ}{\cdot}3\\52^{\circ}{\cdot}4\end{array}\right.$; $29^d\ 7^h\ 15^m$, $\left\{\begin{array}{l}48^{\circ}{\cdot}0\\47^{\circ}{\cdot}1\end{array}\right.$; $29^d\ 9^h$, $\left\{\begin{array}{l}47^{\circ}{\cdot}4\\47^{\circ}{\cdot}0\end{array}\right.$; $29^d\ 11^h$, $\left\{\begin{array}{l}45^{\circ}{\cdot}9\\46^{\circ}{\cdot}0\end{array}\right.$; $29^d\ 12^h$, $\left\{\begin{array}{l}45^{\circ}{\cdot}1\\45^{\circ}{\cdot}3\end{array}\right.$.

March 29^d and April 5^d. See notes on Aurora, p. 61.

April $5^d\ 5^h$. The readings of the Bifilar from $5^h\ 5^m$ till 45^m were estimated, as the scale, though in view, was beyond the vertical wire of the telescope; at $17\frac{1}{2}^m$ the scale was completely out of the field, and the reading given is a rough approximation.

The half minutes in the times of observations before $6^h\ 5^m$ are due to clock error.

Göttingen Mean Time.	DECLINATION.		BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Apr. 5 5	20½	25 26·82	21½	676·		
			22½	673·	23½	1161·9
					24½	1185·3
	25½	57·07	26½	665·		
			27½	661·	28½	1162·9
	29½	42·25			29½	1101·6
	30½	43·36	30½	648·	31½	1103·3
	33½	31·86	32½	644·	33½	1177·2
			34½	645·		
	35½	24·20			35½	1147·4
			38	646·	38	1102·2
	40½	44·23	40½	635·2		
			43	632·0	43	1158·3
	45½	39·99	45½	631·5		
			48	624·0	48	1239·4
	50½	25·75	50½	606·2		
			53	606·0	53	1188·5
	55½	22·72	57½	605·0	58½	1148·7
					59½	1125·6
Apr. 5 6	0½	23·56	3½	592·1	4½	1065·6
	5½	30·99	7½	594·6	8½	1058·0
	10	43·68	12	572·4	13	1111·8
	15	33·57	15	553·5		
			17½	559·5	17½	1067·4
	20	32·80	20	563·3	19	1055·7
	22	35·15	22½	559·0	22½	1032·5
					24	1029·4
	25	35·02	25	551·3		
			27½	545·9	27½	1023·9
	30	30·85	30	547·7		
			32½	557·4	32½	1023·8
	35	29·65	35	571·0	36	1043·3
			37½	558·0	37½	1040·0
	40	32·69	40	550·6		
			42½	553·1	42½	1037·5
	45	31·01	45	570·2	46	1057·2
			47½	577·5	47½	1061·6
	50	32·17	50	572·0		
			52½	575·3	52½	1073·0
	55	33·27	55	594·7	56	1095·1
			57½	618·8	57½	1104·0
Apr. 5 7	0	37·88	0	627·2	1	1124·0
			2½	612·7	2½	1124·9
	5	39·97	5	610·4		
			7½	607·0	7½	1113·3
	10	51·94	11½	558·5	11	1052·0
			12½	547·6	12½	1029·6
	14	58·62				
	15	58·12	15	568·0	16	1014·9
			17½	602·8	17½	1028·4
	20	52·82	20	608·2	21	1068·3
			22½	584·2	22½	1074·3
	25	58·25	25	553·0	26	1027·9
			27½	505·1	27½	1008·5
	30	50·15	30	467·3		
Apr. 5 7			31	457·9	31	987·0
			32½	452·0	32½	1001·0
	34	25 32·20	34	447·2		
	35	28·57	35	447·7		
			37½	456·1	37½	981·6
	40	25·54	40	459·4	41	950·5
			42½	471·8	42½	947·2
	45	18·65	45	475·9	46	930·7
			47½	488·1	47½	922·2
	50	15·39	50	498·2		
			52½	503·7	52½	904·2
	55	16·01	55	513·5		
			57½	510·6	57½	901·8
Apr. 5 8	0	16·57	2	509·4	3	897·1
	5	17·88	7	493·6	8	886·7
	10	20·52	12	495·1	13	881·7
	15	20·77	17	490·1	18	860·7
	20	18·95	22	490·5	23	851·3
	25	19·17	27	474·9	28	840·4
	30	19·61	32	441·0	33	808·4
	35	19·46	37	463·6	38	803·5
	40	17·11	42	510·5	43	801·6
	45	14·82	47	494·4	48	826·7
	50	15·02	52	466·7	53	802·1
	55	12·04	57	483·4	58	806·1
Apr. 5 9	0	10·82	2	460·3	3	771·4
	5	14·93	7	476·0	8	764·0
	10	15·22	12	502·7	13	768·6
	15	18·50	17	495·5	18	772·2
	20	18·33	22	485·4	23	756·6
	25	18·10	27	478·6	28	739·0
	30	15·83	32	465·8	33	708·7
	35	15·19	37	445·3	38	672·9
	40	14·76	42	459·6	43	660·5
	45	14·01	47	465·9	48	671·8
	50	19·24	52	472·2	53	683·7
	55	20·99	57	467·3	58	679·2
Apr. 5 10	0	20·47	2	468·1	3	679·5
	5	16·23	7	461·8	8	692·3
	10	16·20	12	482·5	13	700·1
	15	15·79	17	518·4	18	697·2
	20	18·65	22	496·8	23	673·7
	25	19·17	27	473·4	28	628·0
	30	23·90	32	472·9	33	625·0
	35	25·52	37	451·0	38	618·8
			39	491·5		
	40	19·89	41	485·0		
			42	477·8	43	660·7
	45	12·00	47	479·2	48	667·7
			49	468·1		
	50	7·73	52	481·2	53	638·4
			54	485·4		
	55	2·15	57	486·5	58	619·8
			59	491·3		
Apr. 5 11	0	4·75	1	500·6		

BIFILAR. $k=0·0001248$. BALANCE. $k=0·000015$ approximately.

	April 5^{d} 7^{h},	5^{d} 9^{h},
BIFILAR THERMOMETER,	50°·0	50°·2
BALANCE THERMOMETER,	49°·5;	50°·0.

April 5^{d}. See notes on the Aurora, p. 61.

Göttingen Mean Time.	Declination.		Bifilar.		Balance.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. d.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Apr. 5 11			2	500·4	3	634·6
	5	25 5·80	6	534·0		
			7	544·5		
			8	546·1	8	688·1
	10	25 6·54	11	540·4		
			12	533·3	13	718·0
	15	25 4·55	16	513·7		
			17	516·1	18	711·4
			19	520·7		
	20	24 55·61	22	530·0	23	690·6
			24	536·4		
	25	24 56·21	27	534·4	28	656·7
	30	25 2·03	32	526·1	33	624·5
	35	5·31	37	522·1	38	620·5
	40	4·69	42	513·5	43	616·3
	45	4·39	47	510·6	48	619·0
	50	5·94	52	507·6	53	626·1
	55	6·54	57	504·2	58	627·1
Apr. 5 12	0	8·65	2	501·9	3	623·5
	5	11·24	7	497·3	8	627·1
	10	10·85	12	498·3	13	634·4
	15	9·76	17	498·2	18	624·4
	20	11·13	22	498·0	23	616·4
	25	12·87	27	496·1	28	610·8
	30	15·02	32	489·1	33	597·7
	35	15·32	37	481·2	38	572·7
	40	14·60	42	471·8	43	551·2
	45	11·69	47	474·2	48	543·1
	50	10·55	52	485·0	53	562·1
	55	11·26	57	482·3	58	583·0
Apr. 5 13	0	14·55	2	458·9	3	579·8
	5	15·32	7	435·9	8	541·1
	10	20·20	11	410·3		
			12	413·5	12	504·0
			13	422·2	13	486·9
			14	461·0		
	15	23·43	15	461·4		
			16	453·2		
			17	430·9	17	418·5
			18	428·0	18	400·9
			19	448·2		
	20	31·38	20	478·3		
			21	516·1		
			22	539·7	22	480·5
			23	559·0	23	487·2
			24	547·5		
	25	30·85	25	537·8		
			26	520·6		
			27	500·2	27	477·0
			28	487·3	28	473·5
			29	469·6		
	30	46·35	30	450·9		
			31	448·7		
			32	461·2	32	409·0
			33	465·3	33	419·2

Göttingen Mean Time.	Declination.		Bifilar.		Balance.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Apr. 5 13			34	460·6		
	35	25 38·51	35	455·5		
			36	452·7		
			37	466·2	37	502·4
			38	473·8	38	521·3
			39	491·3		
	40	6·41	40	501·9		
			41	517·9		
			42	526·9	42	507·3
			43	530·8	43	482·0
			44	531·9		
	45	12·90	45	528·0		
			46	516·0		
			47	507·1	47	388·9
			48	498·6	48	391·2
			49	488·4		
	50	20·16	50	484·1		
			51	484·3		
			52	484·5	52	417·2
			53	487·6	53	421·1
			54	490·7		
	55	18·18	55	489·1		
			56	487·5		
			57	485·4	57	413·9
			58	483·2	58	411·7
			59	479·0		
Apr. 5 14	0	22.15	0	476·4		
			2	467·9	3	421·0
			4	468·5		
	5	20·68	5	468·0		
			6	467·7		
			7	469·4	7	442·0
	10	16·10	10	472·7	8	450·2
			11	474·3		
			12	475·8	13	462·1
			14	486·5		
	15	14·67	16	492·6		
			17	495·4		
			18	499·4	18	452·0
			19	499·6		
	20	20·58	21	493·3		
			22	489·0	22	427·3
			24	487·1	23	429·8
	25	23·91	26	479·7		
			27	477·5	27	440·5
			28	475·6	28	443·5
	30	23·48	30	475·5		
			32	477·5	32	471·4
			33	479·8	33	475·9
	35	18·05	35	483·9		
			37	487·8	37	491·2
					38	494·1
	40	15·76	42	488·9	43	496·2
	45	14·76	47	493·4	48	489·7
	50	16·50	52	484·0	53	485·2

BIFILAR. $k = 0{\cdot}0001248$. BALANCE. $k = 0{\cdot}000015$ approximately.

BIFILAR THERMOMETER, BALANCE THERMOMETER, $\left.\right\}$ April $5^d\,12^h$, $\left\{\begin{array}{l}48^\circ{\cdot}7\\49^\circ{\cdot}6\end{array}\right.$; $5^d\,13^h$, $\left\{\begin{array}{l}48^\circ{\cdot}1\\49^\circ{\cdot}2\end{array}\right.$; $5^d\,14^h$, $\left\{\begin{array}{l}47^\circ{\cdot}3\\49^\circ{\cdot}0\end{array}\right.$.

April 5^d. See notes on the Aurora, p. 61.

Göttingen Mean Time.	DECLINATION.		BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Apr. 5 14			54	494·2		
	55	25 15·36	55	500·5		
			56	501·5		
			57	501·9	57	486·7
			58	503·4	58	488·3
Apr. 5 15	0	20·43	0	499·4		
			2	499·9	2	505·2
					3	509·1
	5	18·48	7	497·6	8	528·4
	10	16·97	12	506·3	13	539·8
			14	508·7		
	15	16·57	17	509·2	18	544·5
	20	17·34	22	511·0	23	554·4
	25	17·41	27	514·2	28	564·6
	30	16·73	32	518·2	33	570·6
	35	16·97	37	520·7	38	578·2
	40	17·25	42	521·0	43	585·2
	45	17·61	47	516·8	48	590·5
	50	16·24	52	516·8	53	591·9
	55	15·19	57	517·0	58	591·2
Apr. 5 16	0	16·03	2	513·8	3	594·0
	5	14·92	7	514·0	8	593·9
	10	14·48	12	515·3	13	593·6
	15	15·39	17	514·4	18	589·2
	20	14·97	22	509·9	23	586·9
	25	14·85	27	508·4	28	579·3
	30	14·08	32	510·8	33	574·5
	35	13·91	37	511·5	38	574·2
	40	14·18	42	510·0	43	570·9
	45	14·51	47	510·3	48	567·5
	50	14·82	52	509·4	53	564·0
	55	14·89	57	508·2	58	564·6
Apr. 5 17	0	15·09	2	505·0	3	564·0
	5	14·92	7	504·3	8	562·9
	10	14·11	12	506·9	13	562·9
	15	14·20	17	508·9	18	562·3
	20	14·06	22	510·7	23	566·5
	40	13·95	42	513·8	43	561·6
Apr. 5 18	0	14·23	2	515·4	3	566·9
Apr. 5 19	55	24·00	57	517·9	58	565·0
Apr. 5 20	0	23·63	2	519·2	3	563·5
Apr. 5 21	50	30·25	52	505·0	53	628·4
	55	29·14	57	503·7	58	632·0
Apr. 5 22	0	28·64	2	504·6	3	633·5
			7	508·4	8	638·1
	10	29·71	12	508·6	13	643·9
	15	31·09				
	30	35·06	32	505·5	33	653·3
Apr. 5 23	5	36·88	7	517·9	8	665·9
Apr. 6 0	0	25 34·82	2	521·1	3	701·8
Apr. 6 1	0	39·44	2	532·8	3	695·6
	30	38·87	32	529·7	33	723·0
Apr. 6 2	0	41·98	2	533·5	3	746·1
	5	38·96	7	536·2	8	754·4
Apr. 6 2	10	25 39·72	12	541·0	13	755·3
	15	40·03	17	539·6	18	772·1
	20	38·35	22	539·1	23	778·0
	30	39·29	32	543·5	33	793·4
	35	40·70	37	551·7	38	804·9
	40	41·14	42	549·5	43	823·5
	45	38·53	47	556·9	48	825·9
	50	39·90	52	556·5	53	825·1
	55	42·19	57	553·0	58	825·4
Apr. 6 3	0	43·10	2	545·7	3	827·4
	5	41·24	7	545·4	8	836·7
	10	39·96	12	549·6	13	835·9
	15	37·89	17	555·6	18	834·3
	20	38·95	22	554·3	23	829·7
	25	40·17	27	553·5	28	824·7
	30	41·24	32	551·1	33	820·2
	35	39·83	37	548·1	38	821·1
	40	40·03	42	545·7	43	820·3
	45	40·20	47	543·0	48	819·9
	50	40·48	52	538·0	53	817·5
	55	39·84	57	546·5	58	810·4
Apr. 6 4	0	40·91	2	555·1	3	804·9
	5	41·47	7	562·0	8	802·0
	10	41·69	12	554·8	13	807·2
	15	40·24	17	548·0	18	808·5
	20	39·43	22	558·4	23	806·7
	25	38·69				
Apr. 6 5	0	39·39	2	543·8	3	804·8
Apr. 6 6	0	32·69	2	543·4	3	803·3
	10	31·38	12	538·6	13	802·7
Apr. 6 8	0	26·35	2	540·3	3	726·9
Apr. 6 10	5	8·60	7	521·8	8	735·4
	10	6·05	12	522·1	13	740·3
	15	8·21	17	507·3	18	753·1
	20	4·52	22	517·0	23	748·1
	25	6·42	27	521·9	28	746·9
	30	6·05	32	528·3	33	744·4
	35	8·41	37	530·6	38	741·1
	40	12·33	42	531·0	43	744·9
	45	14·92	47	531·1	48	741·3
	50	14·62	52	536·5	53	724·9
	55	15·32	57	515·0	58	706·5
Apr. 6 11	0	15·09	2	540·7	3	699·3
	5	16·43	7	534·5	8	690·7
	10	16·94	12	534·9	13	671·6
	15	17·62	17	534·3	18	673·6
	20	18·66	22	531·2	23	666·0
	25	18·84	27	528·7	28	655·9
	30	18·43	32	525·9	33	648·4
	35	17·05	37	523·6	38	641·9
	40	15·90	42	520·2	43	635·8
	45	15·02	47	518·7	58	626·9
	50	14·36	52	517·0	53	615·4
	55	14·11	57	508·7	58	606·3
Apr. 6 12	0	14·28	2	504·5	3	607·0

BIFILAR. $k=0{\cdot}0001248$. BALANCE. $k=0{\cdot}000015$ approximately.

	April $5^d\ 15^h$,	$5^d\ 16^h$,	$5^d\ 17^h$,	$6^d\ 1^h$,	$6^d\ 5^h$,	$6^d\ 12^h$,
BIFILAR THERMOMETER,	46°·6	46°·0	45°·7	45°·7	49°·8	49°·2
BALANCE THERMOMETER,	48°·4	47°·9	47°·5	47°·0	49°·0	49°·6

April 5^d. See notes on the Aurora, p. 61.

Göttingen Mean Time.	Declination. Min. of Obs.	Declination. Reading Reduced.	Bifilar. Min. of Obs.	Bifilar. Reading Corrected.	Balance. Min. of Obs.	Balance. Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Apr. 6 12	5	25 13·55	7	503·5	8	610·6
	10	12·63	12	504·4	13	616·8
	15	11·12	17	513·3	18	629·8
	20	10·48	22	521·5	23	636·8
	25	11·15	27	527·4	28	640·5
	30	11·89	32	529·5	33	638·4
	35	12·07	37	531·4	38	635·3
	40	12·16	42	529·1	43	633·2
	45	12·50	47	523·5	48	633·0
	50	13·10	52	523·2	53	631·4
	55	13·61	57	521·0	58	629·1
Apr. 6 13	0	14·51	2	518·5	3	627·8
	20	14·72	22	512·4	23	606·9
	25	14·49	27	510·7	28	598·6
	30	14·16	32	509·4	33	592·7
	35	14·31	37	508·3	38	587·8
	40	14·16	42	503·2	43	581·0
	45	14·23	47	495·8	48	568·9
	50	16·21	52	483·5	53	549·1
	55	22·09	57	460·1	58	519·7
Apr. 6 14	0	30·89	2	452·1	3	467·4
	5	35·86	7	424·9	8	362·9
	10	41·22	12	422·3	13	290·9
			14	442·9		
	15	42·21	16	429·2		
			17	420·4	18	273·2
			19	434·4		
	20	38·95			21	294·3
			22	449·2	23	312·7
			29	511·7	28	351·3
	30	25·93	31	514·9		
			32	515·5	33	364·1
			34	517·0		
	35	27·02	37	520·2	38	364·1
	40	27·31	42	524·8	43	371·6
	45	27·70	47	532·5	48	383·5
	50	29·06	52	524·6	53	393·8
	55	28·37	57	519·5	58	404·2
Apr. 6 15	0	27·29	2	508·8	3	412·1
	5	23·59	7	511·3	8	429·5
	10	20·84	12	511·0	13	435·7
	15	18·15	17	508·6	18	446·5
	20	15·39	22	505·8	23	454·5
	25	12·09	27	508·7	28	467·4
	30	10·48	32	510·9	33	478·6
	35	10·21	37	509·0	38	491·6
	40	10·41	42	510·0	43	502·6
	45	11·12	47	510·4	48	509·6
	50	12·16	52	507·0	53	510·3
Apr. 6 16	0	11·98	2	510·7	3	520·5
	10	15·66	12	502·2	13	531·1
	15	18·01	17	496·6	18	537·1
	20	19·80	22	492·9	23	542·8
	25	22·29	27	492·5	28	546·7
	30	24·77	32	488·2	33	546·5
Apr. 6 16			37	493·2	38	549·0
	40	25 27·16	42	499·4	43	551·9
	45	28·54	47	504·4	48	552·6
			52	509·9	53	549·4
	55	28·00	57	515·6	58	547·1
Apr. 6 17	0	27·43	2	519·9	3	547·0
	5	26·79	7	521·1	8	549·6
	25	22·62	27	529·5	28	563·8
	30	23·70	32	524·5	33	572·7
	45	21·58	47	527·1	48	592·2
	55	21·86	57	527·0	58	602·9
Apr. 6 18	0	21·68	2	527·6	3	607·8
Apr. 6 19	10	22·05	12	529·2	13	643·5
Apr. 6 20	0	21·91	2	530·1	3	659·3
Apr. 7 6	0	25 20·47	2	538·8	3	765·1
	5	20·70	7	549·0	8	763·2
	10	22·45	12	543·8	13	762·8
	15	23·29	17	546·4	18	760·1
Apr. 7 8	0	19·10	2	538·7	3	743·9
	10	11·53	12	555·4	13	726·4
	15	3·58	17	576·2	18	709·3
	20	7·83	22	586·4	23	703·0
	25	12·74	27	576·4	28	703·9
	30	14·87	32	570·5	33	702·1
	35	18·48	37	558·2	38	701·3
	40	19·33	42	548·8	43	699·3
	45	20·41	47	543·7	48	699·2
	50	20·74	52	537·3	53	698·8
	55	20·67	57	532·5	58	696·8
Apr. 7 9	0	19·09	2	526·7	3	696·8
	5	16·91	7	527·2	8	692·0
	10	14·48	12	527·8	13	690·8
	15	12·48	17	532·3	18	687·6
	20	12·16	22	534·0	23	687·0
	25	12·74	27	532·1	28	687·9
	30	12·70	32	530·1	33	691·1
	50	15·22	52	536·5	53	691·6
Apr. 7 10	0	18·73	2	536·4	3	694·8
Apr. 7 18	0	25 23·90	2	544·5	3	626·0
	15	24·80	17	538·6	18	630·9
Apr. 8 4	0	25 29·24	2	542·9	3	716·3
Apr. 8 5	55	15·76	57	557·9	58	779·0
Apr. 8 6	0	16·62	2	561·0	3	773·8
	10	17·20	12	559·5	13	778·2
	25	18·80	27	546·0	28	783·7
	30	18·55	32	546·5	33	785·1
	35	19·83				
Apr. 8 7	0	22·58	2	541·1	3	773·6
Apr. 8 8	0	20·67	2	543·2	3	756·7
Apr. 11 8	0	25 16·10	2	527·4	3	714·5
	10	12·87	12	533·2	13	720·2

BIFILAR. k=0·0001248. BALANCE. k=0·000015 approximately.

	April 6^{d} 13^{h}	6^{d} 14^{h}	6^{d} 15^{h}	6^{d} 16^{h}	6^{d} 17^{h}	7^{d} 19^{h}
BIFILAR THERMOMETER.	49°·0	48°·7	48°·2	47°·8	47°·2	47°·5
BALANCE THERMOMETER.	49°·8	49°·5	49°.3	49°·4	48°·3	47°·0

April 7^{d}. See notes on the Aurora, p. 61.

NOTES ON THE AURORA BOREALIS.

d.	h.	m.	
March 29			An Auroral light was seen about 9^h to NNW., assuming the form of a segment of a circle, which became rather bright about 9^h 50^m, the light being homogeneous; at 10^h 50^m the light was more spotted, but no pencils were visible. At 10^h 25^m a meteoric light was seen, at first rather faint, proceeding from a point 1° to the south of *Zeta* Orionis (which was then just seen to about WSW. above the surrounding trees), passing between Castor and Pollux, and lost in a nebula in the back of Leo Minor. It became gradually brighter till about 10^h 35^m, when its brightness perhaps equalled the most vivid pencils of an aurora, and gradually diminished in intensity and length till altogether lost about 10^h 55^m. The breadth at Orion was about 1°, this being the brightest portion of the meteor, but increasing gradually upwards, filling the space between Castor and Pollux; the greatest length seen might be about 100.° There was no appearance of corruscations. This meteor, undoubtedly connected with the aurora, was singular in every way, whether we regard its form, position, isolation, or duration. The Aurora had disappeared at 12^h.
April 5	9	30.	Aurora, altitude about 35° or 40°; streamers and corruscations, brightest to N. by E.
	9	40.	Bright auroral arch stretches from W. to NE., altitude 30°, sending streamers *downwards* to N.
	10	15.	Splendid aurora, originally with a double arch, the greatest having an altitude of 80°, the other of 60°, spanning 150° of horizon. An auroral pencil seen frequently in the same position as that observed on March 29, but never having the same duration. The aurora is brightest to NE. by E., the E. extremity of the arch, although the moon being near that point renders it less obvious. A portion to the E., which is brightest, branches off in a cycloidal form. The arch is sometimes triple, the lowest being 10° altitude, with pencils of aurora between.
	10	20.	Arches more broken, and sending pencils up to the zenith. Arches broken into pencils, vivid from W., and directed a little to the S. of the zenith.
	10	22.	Arch altogether irregular to E. as if broken into small arches, with a bright mass to NNW. and NW., extending to the W. extremity of the arch, but broken at the N.; the dark space below having pencils occasionally.
	10	25.	Pencils to W., very bright; arch strangely irregular, the light space being about 15° broad, and generally cycloidal at the terminations on the horizon. A long pencil seen frequently to W., as at 15^m.
	11	11.	The arch now spans 130° of horizon, is 30° altitude, and 5° broad, with broad brushes of light below; the western extremity of the arch is bent inwards towards the north.
	11	34.	Arch only 10° altitude.
	12	30.	Arch spans 130°, 12° altitude, 6° or 7° broad, and the form is cycloidal: no pencils at present.
	12	45.	Again double arches, but close to each other; occasionally pencils from the NE. extremity. The moon is below the arch to WNW., and has a corona the breadth of its own diameter; the sky is beautifully clear, the stars appearing very brilliant, and no clouds are to be seen.
	13	0–5.	Strong pencils from the E. extremity of the arch. A new arch commencing at NNW., is springing up with the other; its altitude is 8°. The apex of the greater arch is about N. 5° W., and the breadth is increasing from 3° to 10°—much flickering.
	14	0.	Auroral arch much broken—altogether diminished; patch of cloud to NNW.
April 5	15	30.	The sky became quickly covered with scud—the aurora gone.
April 7	14	0.	An aurora to N., in the form of portion of an arch, 10° broad, reaching from W. to NNW.—*flickering*, but no pencils.
	16	0.	Faint auroral mass of light, 8° high and broad, variable in brightness, flickering.
	16	35.	Auroral light still flickering to NNW.—strong twilight.

Göttingen Mean Time.	Declination.		Bifilar.		Balance.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Apr. 11 8	15	25 12·56	17	534·3	18	723·6
	30	15·30	32	535·9	33	726·0
Apr. 11 9	35	21·64	37	534·3	38	706·3
Apr. 11 10	0	22·45	2	535·4	3	706·6
Apr. 12 2	0	25 29·88	2	542·5	3	677·1
Apr. 12 3	45	28·23	47	561·6	48	680·7
	50	28·47				
Apr. 12 4	0	28·07	2	559·5	3	690·1
	15	27·43	17	548·4	18	696·4
Apr. 12 5	45	30·05	47	560·6	48	740·2
	50	30·25	52	555·1	53	748·5
	55	33·54	57	533·3	58	767·1
Apr. 12 6	0	29·01	2	534·4	3	786·5
	5	24·37	7	542·9	8	800·8
	10	16·92	12	566·1	13	800·7
	15	24·17	17	557·7	18	810·1
	20	23·16	22	551·5	23	817·9
	25	21·91	27	547·1	28	820·4
	30	21·86	32	543·5	33	821·6
	35	22·45	37	543·9	38	826·5
	40	21·81	42	546·6	43	822·9
	45	23·71	47	545·4	48	822·7
	50	24·20	52	547·0	53	819·2
	55	26·17	57	542·4	58	823·9
Apr. 12 7	0	24·99	2	541·7	3	825·4
	5	22·33	7	537·8	8	822·1
	10	22·47	12	540·6	13	817·3
	15	22·85	17	542·9	18	811·5
	20	22·56	22	540·4	23	810·1
	25	21·62	27	541·4	28	807·4
	30	22·45	32	542·2	33	807·8
	35	23·32	37	538·6	38	808·3
	40	23·36	42	533·5	43	807·6
	45	21·37	47	537·4	48	802·3
	50	21·73	52	545·7	53	797·6
	55	23·17	57	539·3	58	801·7
Apr. 12 8	0	23·07	2	537·0	3	800·7
	5	20·90	7	538·0	8	804·3
	10	18·18	12	537·6	13	806·2
	15	13·07	17	538·5	18	799·6
	20	13·34	22	538·8	23	792·3
	25	15·14	27	539·7	28	787·1
	30	15·64	32	534·4	33	784·4
	35	15·34	37	535·4	38	778·8
	40	15·83	42	537·2	43	769·9
	45	16·78	47	534·5	48	766·0
	50	17·41	52	525·4	53	770·0
	55	14·15	57	528·8	58	769·5
Apr. 12 9	0	13·68	2	524·7	3	773·0
	5	10·21	7	524·9	8	771·5
	10	6·88	12	529·5	13	761·4
	15	8·46	17	529·8	18	759·6
	20	9·99	22	525·8	23	757·2
	25	9·17	27	529·6	28	753·5
Apr. 12 9	30	25 10·14	32	536·7	33	746·9
	35	8·87	37	543·9	38	739·9
	40	8·11	42	548·7	43	734·6
	45	9·37	47	553·0	48	728·1
	50	14·06	52	548·9	53	723·4
	55	16·53	57	545·8	58	718·9
Apr. 12 10	0	18·55	2	542·2	3	712·5
	5	19·86	7	538·9	8	709·0
	10	21·34	12	535·0	13	706·9
	15	22·52	17	530·1	18	708·0
	20	22·18	22	528·8	23	708·7
Apr. 13 18	0	25 21·71	2	527·1	3	677·2
Apr. 13 19	0	23·90	2	509·6	3	613·6
	20	25·39	22	525·5	23	624·5
	35	25·45	37	535·7	38	629·4
Apr. 13 20	0	22·50	2	539·3	3	638·0
Apr. 14 10	0	25 21·58	2	533·1	3	646·0
	10	19·26	12	534·8	13	657·9
	15	19·22	17	535·3	18	662·5
Apr. 15 6	0	25 17·51	2	549·9	3	722·7
	5	20·34	7	556·5	8	724·3
	10	21·32	12	552·7	13	725·2
Apr. 15 8	0	23·30	2	542·0	3	710·6
Apr. 18 6	0	25 25·72	2	549·8	3	739·6
	25	25·39	27	558·3	28	744·4
	30	23·12	32	560·4	33	750·4
	35	24·38	37	561·5	38	754·7
	50	20·03	52	547·4	53	782·2
	55	16·97	57	545·3	58	802·3
Apr. 18 7	0	15·72	2	544·3	3	813·5
	5	10·58	7	544·2	8	802·0
	10	11·80	12	547·9	13	788·5
	15	13·42	17	549·6	18	780·0
	20	15·12	22	554·1	23	770·8
	25	16·87	27	554·8	28	763·3
	30	19·04	32	558·0	33	754·5
	35	20·30	37	555·1	38	749·8
Apr. 18 8	0	20·57	2	554·1	3	731·9
May 6 6	0	25 24·96	2	516·6	3	660·2
May 6 8	0	25 21·64	2	518·0	3	701·7
May 6 9	40	24 58·08	42	437·2	43	532·5
	45	24 50·67	47	443·8	48	525·1
	50	24 51·59	52	440·0	53	486·5
	55	24 57·94	57	448·5	58	461·1
May 6 10	0	25 4·10	2	422·7	3	400·2
	5	25 6·70	7	392·7	8	360·4
	10	25 6·91	12	416·6	13	375·8
	15	25 5·63	17	406·0	18	343·0
	20	25 4·89	21	374·7		
			22	370·8	23	269·2

Bifilar. Before April 27, $k=0·0001248$; after April 27, $k=0·0001205$. **Balance.** $k=0·000015$ approximately.

$\left.\begin{matrix}\text{Bifilar Thermometer.}\\ \text{Balance Thermometer.}\end{matrix}\right\}$ April $12^d\ 7^h$, $\left\{\begin{matrix}42°·6\\42°·2\end{matrix}\right.$; $18^d\ 7^h$, $\left\{\begin{matrix}55°·0\\54°·5\end{matrix}\right.$.

May 6ᵈ. Quite cloudy throughout this disturbance, but the aurora was observed near London by Sir J. Herschel, and described by him in the Athenæum, No. 811.

Göttingen Mean Time.	DECLINATION.			BIFILAR.		BALANCE.		Göttingen Mean Time.	DECLINATION.			BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.		Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.		Min. of Obs.	Reading Reduced.		Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	°	′	m.	Sc. Div.	m.	Mic. Div.	d. h.	m.	°	′	m.	Sc. Div.	m.	Mic. Div.
May 6 10				24	370·7			May 6 11	37	25	34·85	37	226·6		
	25	25	8·00	27	344·6	28	196·1					38	221·2	38	465·1
	30	25	10·48	32	Out of field.	33	126·0		39	25	26·89	39	227·8		
	35	25	9·54						40	25	21·78	40	222·6		
						41	− 28·5					41	212·4	41	341·1
	43	25	18·32									42	216·9	42	311·0
	47	25	21·08	47	155·8							43	226·2	43	291·7
				48	168·5	48	101·5		44	25	11·82	44	250·1		
				49	185·2				45	25	9·05	45	268·8		
	50	25	24·25	50	184·1							46	260·0		
				51	199·1							47	256·0		
				52	222·3	52	220·5					48	241·2	48	276·1
				53	234·3							49	246·8		
				54	234·4	54	250·0		50	25	7·73	50	256·0	51	342·0
	55	25	21·04	55	221·8							52	271·5		
				56	236·6	56	274·5					53	294·0	53	288·0
	57	25	19·67	57	228·2							54	310·5	54	322·0
				58	221·8	58	317·0		55	24	43·10	55	342·4		
				59	240·8				56	24	42·43	56	348·1		
May 6 11	0	25	10·55	1	252·2	1	454·0					57	331·9	57	417·0
	2	25	7·14	2	263·0							58	346·9	58	427·5
				3	248·2	3	487·0		59	24	32·97	59	348·9		
				4	228·7			May 6 12	0	24	24·67	0	364·2		
	5	25	2·64	5	203·5				1	24	20·54	1	370·2		
				6	204·3				2	24	18·94	2	354·6		
				7	215·1	7	708·9					3	343·9	3	459·6
				8	235·1	8	754·1		4	24	11·29	4	322·1		
				9	257·7	9	803·0		5	24	4·92	5	303·7		
	10	25	16·97	10	286·3							6	299·5	6	480·7
				11	309·7	11	860·1		7	23	58·05	7	296·2		
				12	319·4							8	318·2	8	494·0
				13	310·5	13	903·9		9	23	52·13	9	333·9		
				14	301·6				10	23	51·71	10	335·7		
	15	25	29·14	15	280·5				11	23	52·64	11	334·1	11	471·7
				16	248·2	16	864·1					12	346·4		
	17	25	7·15	17	242·9							13	370·7	13	375·0
				18	208·7	18	940·2		14	24	2·39	14	372·6		
				19	164·2	19	973·4		15	24	6·42	15	364·0		
	20	25	20·03	20	89·0							16	373·2	16	275·0
				21	84·0	21	930·3		17	24	14·63	17	383·0		
				22	105·2	22	911·0					18	372·1	18	233·7
				23	149·7	23	853·0		19	24	21·24	19	363·8		
	24	24	59·14	24	169·4				20	24	27·36	20	357·1	21	201·2
	25	25	5·36	25	188·3							22	374·4		
				26	168·6	26	782·8					23	376·4	23	236·0
	27	24	50·80	27	130·7				24	24	31·60	24	379·6		
				28	134·9	28	755·0		25	24	29·38	25	389·0		
				29	146·2							26	398·3	26	259·0
	30	25	0·60	30	141·0							27	406·2		
				31	167·3							28	420·7	28	260·5
				32	184·8	32	657·0		29	24	20·94	29	424·2		
				33	195·7				30	24	20·87	30	417·9		
	34	25	33·27	34	186·1							31	409·2	31	222·0
	35	25	33·17	35	192·7				32	24	26·09	32	409·9		
				36	215·8	36	569·0					33	408·2	33	181·5

BIFILAR. $k=0{\cdot}0001205$. **BALANCE.** $k=0{\cdot}000015$ approximately.

BIFILAR THERMOMETER. } May 6d 12h, { 52°·4
BALANCE THERMOMETER. } { 54°·0

May 6d 10h 45m. The scale of the Bifilar Magnetometer having gone beyond the field of the reading telescope, the torsion circle was turned from 287° 44′ to 291° 45′; the subsequent readings have been reduced so as to be comparable with those previous to the turning of the torsion circle.—(See *Introduction.*)

Göttingen Mean Time.	DECLINATION. Min. of Obs.	DECLINATION. Reading Reduced.	BIFILAR. Min. of Obs.	BIFILAR. Reading Corrected.	BALANCE. Min. of Obs.	BALANCE. Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
May 6 12	34	24 33·35	34	400·4		
	35	24 36·31	35	401·2		
			36	411·3		
			37	418·7		
			38	412·8	38	125·0
	39	24 46·29	39	410·8		
	40	24 47·92	40	409·4		
			41	411·5	41	123·2
	42	24 49·89	42	416·0		
			43	421·8	43	120·0
	44	24 55·81	44	420·4		
	45	24 57·89	45	429·9		
			46	434·8	46	150·5
			47	441·3		
			48	446·7	48	175·0
	49	25 7·65	49	449·2		
	50	25 10·09	50	447·9		
			51	447·9	51	207·1
			52	447·5		
			53	449·9	53	235·7
			54	448·5		
	55	25 14·48	55	448·7		
			56	446·7		
			57	445·5		
			58	441·4	58	276·3
			59	441·0		
May 6 13	0	25 9·81	0	438·0		
			1	437·4	1	330·0
			4	454·4	3	351·0
	5	24 59·69			6	388·5
	7	24 58·25	7	470·7	8	402·0
			9	480·0		
	10	24 58·01	10	484·8		
			11	488·4	11	414·6
			13	492·1	12	420·6
	15	25 2·33	15	491·7	16	425·6
	20	25 9·47	20	489·4	23	474·1
			24	487·8		
	25	25 12·50	25	487·0	26	509·6
May 7 10	37	25 32·31	38	463·5	39	586·0
	40	30·45	41	460·0	42	580·0
May 7 12					58	531·7
May 7 13	0	19·96	2	452·7	3	522·6
	5	19·39	7	458·0	8	520·2
	10	19·73	12	454·1	13	519·6
	15	19·15	17	447·8		
	20	17·34	22	454·5	23	514·3
	25	15·47	27	461·6	28	508·6
	30	16·60	32	461·5	33	512·1
	35	14·70	37	459·3	38	501·2
	40	14·42	42	457·4	43	499·5
	45	13·61	47	459·1	48	496·9
	50	14·31	52	460·2	53	496·2
	55	15·09	57	460·1	58	495·7

Göttingen Mean Time.	DECLINATION. Min. of Obs.	DECLINATION. Reading Reduced.	BIFILAR. Min. of Obs.	BIFILAR. Reading Corrected.	BALANCE. Min. of Obs.	BALANCE. Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
May 7 14	0	25 13·84				
	5	13·88	7	462·7	8	503·6
May 10 2	0	25 30·16	2	514·7	3	664·3
			42	478·5	43	679·8
May 10 4	0	26·13	2	518·1	3	696·9
May 10 6	0	17·69	2	531·2	3	705·6
	15	16·68	17	535·6	18	707·3
	20	16·53	22	546·0	23	709·5
	30	19·29	32	528·2	33	717·7
	40	20·43	42	521·1	43	715·0
	45	23·77	47	517·2		
May 10 8	0	23·48	2	512·0	3	708·6
May 15 8	0	25 23·91	2	523·9	3	701·2
			10	533·7		
	25	22·77	27	516·0	28	727·8
	30	22·58	32	509·8	33	746·0
	40	21·79	42	512·7	43	789·1
	45	22·36	47	507·1	48	803·4
	55	19·22	57	502·2	58	840·6
May 15 9	0	17·61	2	501·7	3	843·9
	5	16·33	7	499·0	8	844·1
	15	13·71	17	494·2	18	831·1
	20	12·13	22	496·0	23	814·6
	30	16·73	32	495·0	33	785·1
	45	22·32	47	497·3	48	760·3
May 15 10	0	22·58	2	497·2	3	737·2
May 29 18	0	25 28·67	2	509·6	3	615·9
	30	23·66	32	507·2	33	618·4
May 29 19	0	19·89				
May 29 20	0	24·53	2	493·3	3	646·0
	10	23·39	12	491·0	13	643·2
June 2 20	0	25 15·79	2	493·8	3	653·1
June 2 21	15	28·14	17	448·2	18	669·0
	30	30·74	32	479·9	33	650·0
	35	30·82	37	480·5	38	644·8
June 2 22	0	34·85	2	491·8	3	629·3
	10	34·61	12	493·8	13	626·4
	30	33·42	32	489·0	33	629·6
	40	31·66	42	486·5	43	638·4
June 2 23	0	30·05	2	491·4	3	643·4
June 7 10	0	25 32·35	2	510·1	3	642·8
	10	28·23	12	515·9	13	638·6
	15	27·56	17	521·8	18	634·9
	20	27·87	22	524·7	23	629·4
	25	28·10	27	519·2	28	628·6
	30	26·89	32	513·2	33	627·6
	40	20·84	42	525·5	43	619·5
	45	20·48	47	512·2	48	616·4
	50	19·93	52	506·0	53	617·4
	55	18·68	57	499·5	58	617·5

BIFILAR. k=0·0001205. BALANCE. k=0·000015 approximately.

BIFILAR THERMOMETER. BALANCE THERMOMETER. May 7d 13h, {51°·2, 51°·2}; 7d 14h, {51°·0, 51°·2}; 15d 9h, {50°·9, 50°·6}. June 2d 23h, {49°·7, 49°·6}.

May 6d 13h 5m. The torsion circle was turned back from 291° 45′ to 287° 41′; the readings till 13h 25m have been corrected by +3·0 Sc. div., in order to make them comparable with those before 10h 30m.

Göttingen Mean Time.	DECLINATION. Min. of Obs.	DECLINATION. Reading Reduced.	BIFILAR. Min. of Obs.	BIFILAR. Reading Cor-rected.	BALANCE. Min. of Obs.	BALANCE. Reading Cor-rected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
June 7 11	0	25 15·99	2	496·8	3	619·0
	5	14·01	7	493·9	8	620·5
	10	13·03	12	495·0	13	619·7
	15	14·33	17	490·8	18	623·4
	20	16·24	22	492·5	23	624·7
	25	18·01	27	492·1	28	622·5
	30	18·86	32	490·9	33	615·7
	35	19·22	37	490·1	38	608·3
	40	19·76	42	490·7	43	602·1
	45	18·57	47	490·8	48	597·2
	50	17·38	52	490·8	53	591·7
	55	17·17	57	489·6	58	583·7
June 7 12	0	16·40	2	483·2	3	576·0
	5	15·81	7	481·9		
	10	14·62	12	483·9	13	578·0
	15	14·06	17	488·5	18	580·9
	20	14·43	22	491·6	23	587·1
	25	14·60	27	496·7	28	593·2
	30	15·97	32	499·3	33	598·5
	35	17·20				
June 7 18	0	21·95	2	484·6	3	633·7
	30	25·43	32	485·3	33	636·2
June 7 20	0	25·92	2	489·1	3	642·6
June 9 20	0	25 19·54	2	518·7	3	655·8
	10	20·25	12	508·2	13	658·3
	15	20·54	17	507·8	18	657·2
	20	21·02	22	505·8	23	655·6
June 9 22	0	24·06	2	497·2	3	657·5
June 11 22	0	25 25·19	2	477·4	3	663·7
June 11 23	5	29·48	7	467·5	8	673·9
June 12 0	0	27·83	2	492·2	3	663·8
June 13 6	0	25 24·60	2	492·5	3	731·0
	30	22·67	32	539·2	33	712·9
	35	24·65	37	534·2	38	710·6
	40	25·21	42	530·3	43	709·9
	45	25·73	47	523·9	48	710·3
	50	26·62	52	516·8	53	710·9
	55	26·10	57	511·2	58	709·1
June 13 7	0	26·08	2	512·6	3	708·0
June 13 8	0	26·62	2	510·4	3	695·9
June 30 18	0	25 25·14	2	488·8	3	582·2
	30	23·26	32	494·4	33	600·5
June 30 19	0	24·55	2	491·5	3	612·3
	30	19·22	32	495·9	33	618·3
June 30 20	0	16·40	2	484·5	3	636·9
June 30 21			17	475·6	18	657·3
	20	19·15				
	25	19·81	27	483·9	28	652·1
June 30 22	0	20·92	2	481·4	3	647·6
July 1 6	0	25 28·64	2	517·8	3	666·5
July 1 7	45	25 19·20	47	542·0	48	678·1
	50	22·67	52	538·7	53	681·6
	55	25·16	57	529·5	58	680·7
July 1 8	0	25·48	2	520·5	3	681·4
	5	25·78	7	517·5	8	679·9
	10	25·51	12	516·1		
	20	24·75	22	518·0	23	674·4
	30	26·62	32	509·9	33	676·8
	35	27·07	37	503·3	38	679·5
	40	26·13	42	502·5	43	678·1
	45	25·34	47	504·4		
July 1 10	0	25·90	2	506·6	3	669·6
July 4 8	0	25 26·15	2	521·1	3	668·0
	50	13·81	52	530·3	53	668·6
	55	15·46	57	533·1	58	,,
July 4 9	0	17·94	2	526·4	3	670·0
	5	19·10	7	520·4	8	671·5
	10	19·46	12	516·7	13	670·5
	15	19·91	17	514·5	18	,,
	20	21·10	22	514·5	23	,,
	30	23·24	32	512·3	33	,,
July 4 10	0	25·86	2	512·5	3	667·4
July 24 6	0	25 25·32	2	567·3	3	621·0
	10	22·25	12	540.9	13	635·2
	15	22·63	17	541·1	18	637·1
	20	22·69	22	544·6	23	,,
	25	23·14	27	539·1	28	641·5
	30	22·97	32	534·5	33	644·6
	35	22·11	37	527·4	38	646·8
	40	22·62	42	529·2	43	647·2
	45	22·58	47	536·3	48	,,
	50	22·38	52	546·7		
			53	538·8		
July 24 7	0	23·53	2	522·6	3	656·4
	5	24·27	7	518·7	8	659·6
	10	24·67	12	521·0	13	,,
	15	25·01	17	524·7		
			22	516·0	23	672·6
	25	25·95	27	525·5	28	670·4
	30	25·14	32	523·8	33	672·6
	35	25·07	37	525·3	38	675·8
	40	24·67	42	533·8	43	,,
	45	24·67	47	528·1	48	675·6
	50	24·58	52	523·8	53	679·5
July 24 8	0	22·99	2	524·7	3	685·1
July 24 9	5	18·43	7	511·5	8	710·9
	10	20·37	12	506·7	13	709·1
	15	20·28	17	507·2	18	711·8
	20	19·13	22	503·2	23	694·9
	25	19·09	27	494·2	28	677·4
	30	17·88	32	499·3	33	654·2
	35	17·47	37	495·0	38	659·0
	40	12·74	42	474·8	43	631·7

BIFILAR. $k=0·0001205$. BALANCE. $k=0·000015$ approximately.

	June 7^{d} 11^{h}	7^{d} 12^{h}	13^{d} 7^{h}	July 4^{d} 9^{h}	24^{d} 9^{h}
BIFILAR THERMOMETER.	56°·2	52°·0	54°·8	68°·4	61°·8
BALANCE THERMOMETER.	56°·0	50°·0	54°·0	67°·0	……

Göttingen Mean Time.	Declination.		Bifilar.		Balance.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
July 24 9	45	25 1·01	47	490·5	48	628·3
	50	24 53·72	52	524·3	53	634·7
	55	24 52·22	57	528·7	58	599·6
July 24 10	0	24 55·11	2	507·9	3	593·6
	5	24 57·04	7	493·4	8	608·2
	10	24 56·95	12	493·2	13	636·0
	15	24 52·72	17	513·2	18	638·3
	20	24 57·22	22	516·7	23	626·4
	25	25 6·67	27	507·9	28	629·0
	30	5·91	32	508·5	33	627·9
	35	6·77	37	508·2	38	622·5
	50	14·43	52	514·9	53	606·7
	55	15·66	57	515·3	58	604·9
July 24 11	0	17·20	2	518·0	3	601·1
	5	20·25	7	511·2	8	603·3
	15	22·29	17	516·4	18	604·8
July 24 22	0	25 31·03	2	444·1	3	674·9
	5	31·93	7	438·0	8	678·6
	10	32·57	12	436·0	13	678·6
	15	33·22	17	439·0	18	677·0
	20	34·83	22	441·5	23	675·8
	25	34·28	27	442·4	28	674·3
	30	34·72	32	440·3	33	,,
	35	33·47	37	438·5	38	,,
	40	32·58	42	438·8	43	681·3
	45	31·01	47	441·7	48	676·1
	50	29·96	52	447·0	53	675·1
July 24 23	0	31·36	2	451·5	3	,,
	15	31·56	17	458·4	18	677·2
	30	34·82	32	462·5	33	684·6
	35	35·56	37	463·0	38	688·0
	50	34·66	52	473·2	53	696·0
July 25 0	0	33·15	2	467·2	3	702·6
	25	34·52	27	475·0	28	722·2
July 25 1	10	32·05	12	497·6	13	745·3
	15	31·32	17	488·8	18	756·2
	20	32·69	22	486·1	23	766·0
	25	35·89	27	495·8	28	771·8
	30	38·69	32	494·0	33	776·9
	35	35·62	37	505·0	38	782·0
	40	33·96	42	520·3	43	787·2
	45	34·92	47	519·4	48	790·0
	50	34·65	52	519·6	53	795·1
	55	36·90	57	518·7	58	803·6
July 25 2	0	35·59	2	517·5	3	814·0
	5	36·03	7	517·9	8	836·3
	10	32·24	12	516·5	13	861·5
	15	30·16	17	524·6	18	853·3
	20	30·37	22	536·7	23	848·2
	25	34·85	27	538·0	28	849·8
	30	36·63	32	537·1	33	862·4
	35	33·89	37	541·1	38	874·8
	40	33·44	42	551·0	43	882·3
	45	30·29	47	570·2	48	908·9
July 25 2	50	25 29·17	52	572·1	53	922·1
	55	25·29	57	584·8	58	937·4
July 25 3	0	33·07	2	598·8	3	942·0
	5	41·04	7	580·8	8	975·4
	10	28·08	12	569·6	13	944·3
	11½	21·91				
	15	29·88	17	568·1	18	891·3
	17	33·54				
	20	35·89	22	559·1		
	23	39·39			23	898·1
	24	37·37				
	25	34·73	27	547·6	28	907·1
	30	30·51	32	557·2	33	895·0
	35	35·69	37	560·6	38	899·4
	40	32·27	42	586·3	43	899·4
	45	46·94	47	558·7	48	928·1
	46	48·53				
	50	35·73	52	543·1	53	920·3
	54	23·48				
	55	24·03	57	572·8	58	895·4
July 25 4	0	28·12	2	609·2	3	905·5
	4	41·41				
	5	41·11	6	599·5		
			7	597·1	8	947·3
	9	34·11				
	10	28·72	12	597·5	13	871·0
			14	594·4		
	15	40·35				
	16	45·95	17	574·8	18	839·6
	19	52·67				
	20	51·29	21	550·4		
			22	552·7	23	920·6
	24	38·96				
	25	35·49	26	566·1		
			27	567·7	28	890·9
	29	39·27				
	30	40·91	31	553·7		
			32	554·2	33	931·5
	34	31·56				
	35	29·60	36	562·2		
			37	568·1	38	914·2
	39	32·62				
	40	33·76	41	594·9		
			42	599·8	43	917·7
	44	33·74				
	45	33·60	46	627·7		
			47	626·7	48	944·4
	49	39·02				
	50	39·63	51	602·8		
			52	606·6	53	875·5
	54	38·92				
	55	44·70	56	587·1		
			57	580·4	58	829·6
	59	54·73	59	571·7		
July 25 5	0	56·04	0	566·9		

BIFILAR. $k=0{\cdot}0001205$. BALANCE. $k=0{\cdot}000015$ approximately.

$\left.\begin{array}{l}\text{Bifilar Thermometer.}\\ \text{Balance Thermometer.}\end{array}\right\}$ July $24^d\ 11^h$, $\left\{\begin{array}{l}61^\circ{\cdot}0\\ 60^\circ{\cdot}5\end{array}\right.$; $25^d\ 1^h$, $\left\{\begin{array}{l}62^\circ{\cdot}2\\ 60^\circ{\cdot}7\end{array}\right.$; $25^d\ 3^h$, $\left\{\begin{array}{l}64^\circ{\cdot}4\\ 63^\circ{\cdot}9\end{array}\right.$

Göttingen Mean Time.	DECLINATION.		BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
July 25 5			1	562·1	1	851·0
	2	25 52·70	2	556·0		
			3	552·2	3	877·4
	4	50·05	4	553·6		
	5	48·33	5	554·4		
			6	556·3	6	891·3
	7	46·76	7	557·0		
			8	558·4	8	895·6
	10	44·43	10	559·3		
	12	40·53	12	559·9		
			13	561·1	13	900·5
	15	39·52	15	568·4	18	905·7
	20	37·15	22	568·3	23	904·8
	25	34·12	27	566·7	28	920·2
	30	29·38	32	555·7	33	908·5
	35	32·51	37	553·6	38	907·0
	40	37·61	42	524·6	43	876·4
			43	523·8		
	44	29·31	44	524·3		
	45	28·35	45	526·6		
			46	525·9	46	862·3
			47	525·9	48	844·2
	50	30·40	52	512·9	53	817·5
	55	31·73	57	512·8	58	811·3
July 25 6	0	31·96	2	519·4	3	812·8
	5	30·74	7	520·8	8	812·7
	15	25·58	17	530·6	18	798·9
	20	28·27	22	530·4	23	784·6
	25	30·42	27	526·5	28	789·1
	40	22·38	42	520·7	43	784·9
	45	19·63	47	510·0	48	772·6
	50	20·34	52	518·0	53	769·8
	55	22·53	57	518·3	58	771·7
July 25 8	0	19·63	2	508·0	3	736·0
July 25 10	0	20·10	2	474·3	3	663·7
	10	18·97	12	479·7	13	658·8
	15	21·91	17	469·3	18	643·1
	20	21·28	21	463·5		
			22	460·2	23	826·6
	25	20·07	26	462·3		
			27	462·1	28	611·9
			29	445·9		
	30	19·80	31	448·2		
			32	442·1	33	562·3
			34	437·5		
	35	20·28	36	425·7		
			37	431·9	38	520·6
			39	457·1		
	40	17·83	41	465·3		
			42	470·2	43	566·7
			44	476·5		
	45	13·71	47	486·6	48	576·1
			49	476·3		
	50	13·44	52	460·2	53	567·0
			54	467·2		
July 25 10	55	25 13·51	56	478·4		
			57	484·7	58	602·7
			59	488·0		
July 25 11	0	12·60	2	486·6	3	649·3
			4	481·9		
	5	11·77	7	480·8	8	671·6
			9	483·5		
	10	10·55	12	487·0	13	679·3
	15	14·03	17	484·6	18	671·6
	20	16·95	22	482·8	23	674·5
	25	19·27	27	482·0	28	676·9
	40	20·68	42	479·0	43	667·8
	50	21·88	52	484·9	53	667·6
July 25 18	0	15·03	2	466·0	3	642·9
	20	15·19	22	485·9	23	640·7
	30	15·32	32	484·1	33	639·0
Aug. 3 4	0	25 29·08	2	535·3	3	604·0
	20	27·22	22	524·9	23	615·6
Aug. 3 6	0	21·08	2	512·7	3	637·0
Aug. 3 22	0	25 20·82	2	466·7	3	625·5
	35	26·19	37	474·5	38	619·3
Aug. 4 0	0	31·43	2	490·3	3	601·8
	47	34·90	48	508·0	49	608·0
Aug. 4 1	20	29·38	22	522·2	23	663·8
	45	31·36	47	512·4	48	660·1
Aug. 4 2	0	29·42	2	512·9	3	682·0
Aug. 4 4	0	32·78	2	519·3	3	685·9
Aug. 4 5	20	21·24	22	536·4	23	747·1
	30	24·37	32	518·4	33	776·5
	35	21·95	37	518·4	38	782·2
	40	19·26	42	518·7	43	784·5
	45	18·48	47	522·5	48	789·6
	50	15·83	52	516·0	53	,,
	55	11·24	57	532·6	58	778·6
Aug. 4 6	0	13·68	2	537·3	3	772·5
	5	17·15	7	532·2	8	767·0
	10	19·37	12	528·6	13	759·8
	15	22·02	17	524·3	18	752·0
	25	24·37	27	516·8	28	738·1
Aug. 4 8	0	21·24	2	517·4	3	679·1
Aug. 8 18	0	25 37·51	2	461·8	3	475·2
	10	38·08	12	466·6	13	462·9
	15	42·41	17	456·6	18	451·6
	20	43·74	21	468·0		
			22	472·3	23	448·7
			24	476·7		
	25	43·49	26	480·3		
			27	481·8	28	447·6
	30	43·80	31	487·8		
			32	490·5	33	442·0
	35	43·12	36	496·2		
			37	498·7	38	437·9

BIFILAR. $k=0·0001205$. BALANCE. $k=0·000015$ approximately.

BIFILAR THERMOMETER. } July 25d 11h, { 64°·4
BALANCE THERMOMETER. } { 64°·2.

Göttingen Mean Time.	DECLINATION.		BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Aug. 8 18	40	25 42·23	42	503·7	43	427·6
	45	39·20	46	508·6		
			47	508·6	48	421·5
	50	37·77	52	511·3	53	426·7
	55	35·62	57	513·1	58	429·9
Aug. 8 19	0	33·71	2	512·5	3	436·1
	5	32·95	7	512·8	8	445·5
	20	32·15	22	512·7	23	457·2
	25	30·10	27	504·6	28	482·9
	45	23·06	47	502·2	48	512·0
Aug. 8 20	0	19·49	2	498·1	3	537·5
Aug. 8 21	20	20·20	22	486·3	23	595·8
	25	20·21	27	483·5	28	596·7
Aug. 8 22	0	21·95	2	478·8	3	605·6
Aug. 22 0	0	25 31·76	2	498·8	3	663·3
Aug. 22 1	5	39·39	7	490·0		
	10	37·03	12	477·7	13	675·3
	15	36·38	17	483·6	18	673·0
	20	38·11	22	492·1	23	671·7
	25	39·59	27	505·4	28	665·5
	30	40·89	32	509·6	33	664·7
	35	36·63	37	481·4	38	675·3
	40	35·67	42	497·8	43	665·1
	45	37·07	47	496·9	48	„
	50	36·60	52	494·9	53	668·8
	55	34·65	57	490·3	58	672·9
Aug. 22 2	0	33·54	2	487·4	3	675·0
	20	33·98	22	530·0	23	„
	25	33·84	27	529·8	28	683·7
	30	32·48	32	516·8	33	689·2
	35	31·46	37	517·2	38	692·1
			42	526·3		
	45	32·87	47	532·3	48	„
	50	33·78	52	536·6	53	„
			57	524·3		
Aug. 22 3			2	521·3		
	5	33·17	7	524·1	8	705·2
			17	514·6		
	40	33·51	42	533·1	43	708·3
	45	31·50	47	512·0	48	715·6
	50	31·07	52	505·0	53	720·4
			57	495·2		
Aug. 22 4	0	31·22	2	504·7	3	718·9
	10	30·42	12	505·1	13	716·6
Aug. 22 5	15	28·64	17	533·9	18	613·2
	35	27·33	37	523·6	38	628·5
Aug. 22 6	0	26·94	2	519·0	3	731·3
Sept. 1 0	0	25 28·59	2	504·7	…	……
	59	29·95	58	499·8	…	……
Sept. 1 1	0		2	499·8	…	……
	21	30·73	22	505·5	…	……
	43	31·22	42	513·5	…	……
Sept. 1 2	0	31·89	2	514·3	…	……
Sept. 1 2	3	25 31·22	5	507·7	…	……
	24	31·00	22	517·9	…	……
			25	500·0	…	……
	46	32·42	44	518·6	…	……
Sept. 1 3	10	33·62	11	511·9	…	……
	35	28·97	33	493·6	…	……
			35	490·9	…	……
			37	496·6	…	……
			56	521·2	…	……
	58	28·30	59	529·1	…	……
Sept. 1 4	0	27·78	2	525·1	…	……
			16	525·9	…	……
	18	27·10	19	513·8	…	……
			39	502·9	…	……
	40	29·35	42	516·7	…	……
			4	530·1	…	……
Sept. 1 5	7	29·20	8	532·4	…	……
			27	506·3	…	……
	30	23·01	29	513·2	…	……
			47	514·2	…	……
	50	20·12	50	497·8	…	……
Sept. 1 6	0	19·42	2	491·8	…	……
			8	495·9	…	……
	9	17·12	11	503·8	…	……
	46	23·05			…	……
Sept. 1 8	0	17·60	2	511·8	…	……
Sept. 1 20	0	25 32·55	2	478·0	…	……
	15	31·72	17	489·6	…	……
	30	30·37	32	496·4	…	……
	45	28·17	47	503·1	…	……
Sept. 1 22	0	24·41	2	483·5	…	……
Sept. 2 0	0	26·83	2	485·6	…	……
	57	28·44	56	492·8	…	……
Sept. 2 1	18	28·35	18	497·6	…	……
			38	505·6	…	……
			55	489·7	…	……
Sept. 2 2	0	28·05	2	492·4	…	……
			11	500·0	…	……
			14	510·1	…	……
			28	507·0	…	……
			31	497·6	…	……
			48	505·1	…	……
Sept. 2 3	10	27·37	11	498·1	…	……
			29	493·1	…	……
Sept. 2 4	0	26·60	2	503·8	…	……
			21	517·6	…	……
Sept. 2 5	19	22·42	20	499·2	…	……
			38	513·1	…	……
Sept. 2 6	0	20·36	2	507·5	…	……
Sept. 18 10	0	25 7·65	2	519·0	3	796·7
	10	5·65	12	530·1	13	787·1
	15	4·28	17	539·5	18	779·7
	20	5·33	22	539·7	23	776·1

BIFILAR. $k=0·0001205$. BALANCE. $k=0·000015$ approximately.

BIFILAR THERMOMETER. } Aug. 8^d 19^h, { 60°·4 ; 22^d 1^h, { 58°·7
BALANCE THERMOMETER. } { 60°·5 { 58°·3.

Aug. 22^d. A faint Aurora observed for a short period this evening at Edinburgh.
Sept. 1^d—2^d. Observations made during experiments to determine the temperature correction of the Balance Magnet.

Göttingen Mean Time.	DECLINATION.		BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
h. d.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Sept. 18 10	25	25 6·79	27	539·7	28	774·9
	30	9·89	32	538·0	33	772·5
	35	12·14	37	535·7	38	766·8
	40	11·64	42	533·2	43	760·7
	45	11·28	47	527·3	48	753·1
	50	10·88	52	521·3	53	748·2
	55	10·50	57	515·4	58	754·9
Sept. 18 11	0	9·47	2	513·7	3	761·7
	5	10·08	7	510·0	8	762·9
	10	9·57	12	508·1	13	759·4
	15	8·90	17	502·9	18	763·6
	20	8·40	22	495·9	23	765·7
	25	8·97	27	492·8	28	769·3
	30	11·73	32	492·2	33	776·0
	35	15·99	37	487·6	38	786·0
	40	19·37	42	489·7	43	786·0
	45	22·50	47	491·6	48	782·0
	50	23·27	52	493·5	53	774·3
	55	22·11	57	503·1	58	752·5
Sept. 18 12	0	19·93	2	515·0	3	737·2
	5	20·90	7	523·3	8	726·1
	10	23·16	12	520·4	13	721·3
	15	24.27	17	521·3	18	704·4
	20	24·67	22	519·1	23	707·1
	25	26·22	27	518·0	28	708·5
	30	26·86	32	516·4	33	710·0
	35	26·33	37	513·5	38	711·3
Sept. 19 6	0	25 19·29	2	509·0	3	838·7
	20	9·99	22	508·5	23	854·5
	25	8·03	27	512·6	28	858·4
	30	7·95	32	515·5	33	862·2
	35	9·47	37	514·7	38	863·0
	40	9·27	42	510·9	43	861·7
	45	8·53	47	510·0	48	860·1
	50	7·56	52	513·9	53	850·5
	55	6·47	57	516·3	58	852·8
Sept. 19 7	0	6·68	2	518·3	3	851·4
	15	6·03				
	20	7·02	22	520·7	23	848·3
Sept. 19 8	0	14·01	2	507·3	3	846·9
Sept. 19 10	0	19·89	2	511·2	3	780·5
	10	23·36	12	501·3	13	774·8
	20	20·20	22	515·6	23	762·0
	25	18·99	27	517·9	28	755·5
	30	15·00	32	521·6	33	757·6
	35	11·53	37	528·7	38	754·7
	40	10·48	42	537·9	43	749·7
	45	12·20	47	534·8	48	750·5
	50	14·03	52	530·8	53	751·2
	55	15·77	57	526·3	58	754·3
Sept. 19 11	0	17·02	2	520·8	3	757·4
Oct. 4 22	0	25 23·93	2	486·7	3	781·0
Oct. 4 23	0	32·13	2	469·6	3	771·8
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Oct. 4 23	5	25 32·87	7	471·9	8	769·0
	10	32·53	12	470·0	13	763·0
	15	32·35	17	473·3	18	781·5
	20	31·46	22	480·1	23	798·4
	25	32·27	27	480·5	28	798·7
	30	32·10	32	485·5	33	779·6
	35	32·10	37	490·5	38	749·8
	40	32·62	42	491·0	43	763·6
	45	32·80	47	492·3	48	750·9
	50	32·91	52	491·0	53	771·0
	55	32·51	57	492·4	58	769·8
Oct. 5 0	0	32·53	2	493·6	3	770·2
Oct. 5 4	0	27·33	2	513·2	3	798·4
Oct. 5 5	25	16·44	27	501·6	28	853·2
	30	16·53	32	505·9	33	854·9
	45	20·61	47	507·6	48	856·7
Oct. 5 6	0	25·31	2	505·2	3	849·6
Oct. 5 7	55	15·19				
Oct. 5 8	0	11·05	2	507·4	3	802·9
	5	3·01	7	523·7	8	783·7
	10	2·74	12	535·9	13	771·4
	15	6·97	17	537·0	18	763·6
	20	11·47	22	523·8	23	762·9
	25	10·01	27	524·1	28	752·5
	30	11·32	32	516·2	33	751·4
	35	13·17	37	506·7	38	755·3
Oct. 5 10	0	19·67	2	506·0	3	766·3
Oct. 16 10	0	25 12·36	2	549·3	3	828·9
	5	*18·68	7	544·0	8	826·8
	10	21·28	12	537·0	13	823·0
	15	22·63	17	519·6	18	821·7
	20	21·29	22	514·0	23	819·5
	25	17·41	27	521·2	28	815·4
	30	15·88	32	527·3	33	810·4
	35	17·18	37	525·0	38	810·4
	40	17·76	42	523·5	43	810·4
	45	17·88				
Oct. 17 2	0	25 18·41	2	492·4	3	901·7
	5	16·73	7	503·1	8	898·2
	10	21·02	12	505·2	13	900·6
	15	20·40	17	506·0	18	901·6
	20	21·24	22	505·8	23	900·2
	25	22·32	27	506·4	28	899·8
	55	24·69	57	506·1	58	875·8
Oct. 17 4	0	25·32	2	508·5	3	884·6
Oct. 26 4	0	25 22·99	2	500·8	3	879·6
	10	17·78	12	502·1	13	893·0
	15	16·38	17	504·5	18	897·7
	20	14·11	22	510·8	23	897·6
	25	14·36	27	518·0	28	894·9
	30	15·84	32	522·1	33	892·6
Oct. 26 6	0	19·26	2	498·8	3	920·7

BIFILAR. $k=0·0001205$. BALANCE. $k=0·000013$ approximately.

	Sept. 18^{d} 11^{h},	18^{d} 12^{h},	19^{d} 11^{h},	Oct. 4^{d} 23^{h},
BIFILAR THERMOMETER.	62°·0	61°·6	62°·0	58°·0
BALANCE THERMOMETER.	62°·5;	62°·5;	62°·0.	58°·0.

Sept. 18^{d} 10^{h} 50^{m}. A band of auroral light, about 10° altitude, seen among the clouds to NNW.
Sept. 18^{d} 11^{h} 45^{m}. Auroral light still visible, but very faint.
Sept. 18^{d} 12^{h} 40^{m}. The aurora has now almost entirely disappeared.
Sept. 19^{d} 10^{h} 0^{m}. Lightish to NNW. Auroral light?
Sept. 19^{d} 11^{h} 0^{m}. All traces of auroral light have vanished, the sky nearly clear.

Göttingen Mean Time.	Declination.		Bifilar.		Balance.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Oct. 26 6	56	25 5·63				
Oct. 26 7	0	9·89	2	531·9	3	876·7
	5	16·03	7	524·5	8	873·9
	10	18·84	12	522·7	13	867·3
	20	22·80	22	504·8	23	864·5
	25	20·81	27	498·4	28	864·9
	30	19·80	32	498·7	33	866·2
	35	19·24	37	499·3	38	868·4
	40	18·45	42	502·5	43	867·5
Oct. 26 8	0	20·34	2	508·3	3	861·7
Oct. 26 9	55	0·67	57	505·2	58	835·4
Oct. 26 10	0	1·14	2	507·2	3	834·1
	5	2·25	7	506·4	8	835·5
	10	3·68	12	505·0	13	836·3
	15	4·93	17	505·0	18	835·2
	20	5·94	22	508·7	23	833·0
	25	6·89	27	507·2	28	830·7
	30	7·53	32	509·8	33	,,
	35	8·46	37	511·8	38	826·6
	40	9·32	42	511·6	43	824·1
	45	9·94	47	512·7	48	818·7
	50	10·06	52	512·1	53	815·5
Oct. 27 0	0	25 25·90	2	493·9	3	850·1
Oct. 27 1	10	22·08	12	488·5	13	866·4
Oct. 27 2	0	24·17	2	515·1	3	857·8
Oct. 30 10	0	25 17·76	2	507·3	3	854·1
	10	19·10	12	517·7	13	853·9
Oct. 31 6	0	25 18·86	2	513·8	3	846·2
Oct. 31 7	55	12·00	57	525·3	58	822·8
Oct. 31 8	0	12·27	2	525·2	3	823·0
	10	15·36	12	520·3	13	,,
	15	15·66	17	515·6	18	822·6
	20	15·19	22	514·5	23	,,
	30	15·64	32	510·0	33	,,
Oct. 31 10	0	17·88	2	509·3	3	824·4
	10	16·06	12	510·6	13	833·5
Nov. 2 10	0	25 17·07	2	511·6	3	830·2
	10	13·30	12	505·3	13	833·1
	15	12·67	17	504·7	18	830·3
	20	8·84	22	502·8	23	831·8
	25	6·37	27	499·8	28	830·3
	30	4·75	32	505·8	33	825·2
	35	2·98	37	513·8	38	819·7
	40	4·22	42	516·9	43	816·5
	45	5·78	47	514·6	48	811.9
	50	6·30	52	510·4	53	806·3
	55	6·23	57	505·5	58	800·2
Nov. 2 11	0	6·27	2	502·5	3	793·5
	5	7·42	7	502·9	8	788·3
	10	10·77	12	494·7	13	788·8
	15	13·00	17	481·1	18	790·8
Nov. 2 11	20	25 14·15	22	480·0	23	784·4
	25	15·14	27	476·9	28	775·5
	30	13·08	32	504·0	33	762·0
	35	11·76	37	515·0	38	743·6
	40	15·16	42	514·2	43	738·8
	45	17·20	47	496·8	48	729·4
	50	17·71	52	492·5	53	731·4
	55	16·53	57	491·1	58	735·7
Nov. 2 12	0	14·46	2	491·0	3	737·1
	5	12·68	7	492·9	8	726·2
Nov. 2 22	0	25 21·10	2	498·0	3	825·5
	15	22·25	17	496·8	18	827·1
Nov. 2 23	0	24·94	2	495·0	3	821·2
Nov. 3 0	0	26·45	2	493·5	3	837·7
Nov. 3 1	0	27·61	2	503·6	3	854·8
Nov. 3 2	0	25·51	2	503·7	3	859·6
Nov. 3 6	0	21·28	2	514·4	3	840·8
Nov. 3 7	30	17·20	32	508·0		
Nov. 3 8	0	13·71	2	517·6	3	836·5
	10	15·74	12	514·5	13	828·8
Nov. 3 10	0	21·05	2	510·2	3	832·6
	10	20·84				
Nov. 13 8	0	25 15·30	2	502·6		
	10	10·57	12	497·9		
	15	8·86	17	507·6		
	20	10·76	22	504·3		
	45	9·73	47	501·9		
Nov. 13 10	0	16·87	2	504·1	3	805·0
Nov. 16 10	0	25 15·19	2	504·5	3	882·3
	15	16·53				
Dec. 1 10	0	25 10·31	2	507·9	3	868·1
	10	12·40	12	507·6	13	867·6
	25	13·95	27	508·4	28	866·0
Dec. 6 8	0	25 19·37	2	511·8	3	852·0
			8	506·7		
	10	10·80	12	512·5	13	851·1
	15	10·09	17	515·5	18	854·1
	20	10·75	22	516·6	23	855·8
	25	11·98	27	515·6	28	853·5
	30	14·11	32	513·5	33	860·1
Dec. 6 10	0	19·15	2	502·2	3	850·2
Dec. 6 11	25	11·22	27	513·1	28	817·8
	30	11·76				
Dec. 6 12	20	15·05				
Dec. 8 6	0	25 25·14	2	510·6	3	874·8
	10	25·27	12	504·8	13	889·5
	15	24·58	17	504·8	18	895·6
	20	24·80	22	502·4	23	902·3
	25	23·39	27	501·1	28	898·1

BIFILAR. Before Nov. 10^d^, k=0·0001205; after Nov. 10^d^, k=0·0001300.
BALANCE. Before Nov. 13^d^, k=0·000013 approximately; after Nov. 13^d^, k=0·000014 approximately.

BIFILAR THERMOMETER. } Oct. 26ᵈ 7ʰ, $\begin{cases}45^\circ\!\cdot0\\44^\circ\!\cdot5\end{cases}$ Nov. 2ᵈ 11ʰ, $\begin{cases}42^\circ\!\cdot3\\42^\circ\!\cdot5\end{cases}$; 2ᵈ 12ʰ, $\begin{cases}42^\circ\!\cdot1\\42^\circ\!\cdot5\end{cases}$ Dec. 6ᵈ 11½ʰ, $\begin{cases}44^\circ\!\cdot4\\44^\circ\!\cdot9\end{cases}$
BALANCE THERMOMETER.

Oct. 26ᵈ 9ʰ 50ᵐ. Aurora in the form of a low arch, 8° high, stretching from NW to N. At 10ʰ 0ᵐ it was fainter. No aurora was visible at 9ʰ.
Oct. 26ᵈ 10ʰ 55ᵐ. Aurora imperceptible; the north is partially covered with clouds.
Nov. 2ᵈ 10ʰ 30ᵐ. Milky like to N.; perhaps auroral light, but doubtful on account of moonlight.
Nov. 13ᵈ 8ʰ. The Balance Magnetometer not in adjustment. An auroral light to N. like the reflection of a great fire as seen below a thick mass of clouds.

Göttingen Mean Time.	Declination.		Bifilar.		Balance.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Dec. 8 6	30	25 22·05	32	500·5	33	911·9
	35	21·88	37	502·3	38	916·0
	40	21·91	42	501·2	43	916·0
	45	20·88				
Dec. 8 8	0	17·88	2	502·8	3	947·9
			7	490·3	8	954·9
	10	13·61	12	493·1	13	946·7
	15	12·43	17	502·1	18	931·0
	20	15·12	22	500·6	23	923·0
	25	12·90	27	500·8	28	928·0
	30	11·98	32	496·1	33	927·0
	35	6·57	37	501·7	38	902·8
	40	10·85	42	502·7	43	893·8
	45	15·79	47	501·4	48	883·8
	50	19·27	52	497·9	53	872·0
	55	25·68	57	491·4	58	860·7
Dec. 8 9	0	25 25·27	2	475·7	3	851·8
	5	25 18·85	7	467·2	8	861·3
	10	25 3·25	12	478·7	13	854·1
	15	24 57·12	17	491·1	18	843·0
	20	24 56·15	22	494·5	23	841·8
	25	24 54·91	27	496·9	28	840·9
	30	24 56·73	32	503·3	33	841·0
	35	24 59·22	37	506·2	38	839·8
	40	25 2·53	42	505·3	43	839·0
	45	25 5·73	47	499·0	48	840·8
	50	25 7·26	52	493·5	53	844·5
	55	25 7·62	57	492·5	58	847·0
Dec. 8 10	0	25 8·23	2	494·4	3	851·2
	5	25 10·34	7	496·8	8	851·5
	10	25 13·14	12	498·5	13	853·1
Dec. 8 18	0	25 22·55	2	530·7	3	816·0
	15	23·29	17	529·7	18	815·5
	40	24·33	42	530·4	43	814·2
Dec. 9 8	0	25 9·84	2	527·3	3	852·5
	5	12·80	7	533·3	8	847·3
	10	14·40	12	536·2	13	839·6
	15	13·93	17	529·6	18	842·5
	20	10·52	22	521·4	23	841·6
	25	8·20	27	528·8	28	836·7
	30	7·48	32	534·8	33	832·3
	35	10·25	37	533·8	38	833·8
	40	12·60	42	528·4	43	836·4
	45	15·72	47	521·3	48	839·5
	50	15·39	52	518·0	53	839·3
	55	17·00	57	511·9	58	843·2
Dec. 9 9	0	17·96	2	509·7	3	845·5
	5	18·43	7	509·5	8	846·5
Dec. 9 10	0	18·15	2	510·4	3	849·0
Dec. 10 12	50	25 11·87	52	495·8	53	778·6
	55	10·58	57	500·2	58	781·9
Dec. 10 13	0	10·41	2	503·7	3	783·0

Göttingen Mean Time.	Declination.		Bifilar.		Balance.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Dec. 10 13	5	25 11·19	7	503·7	8	788·0
	10	12·27	12	50[illegible]·9	13	791·3
	15	13·17	17	505·7	18	790·6
	20	14·48	22	509·2	23	792·4
	25	15·37	27	506·6	28	793·0
	30	15·52	32	503·9	33	795·1
	35	15·56	37	503·3	38	797·1
	40	16·38	42	500·4	43	801·0
	45	16·91	47	500·4	48	803·3
	50	17·47	52	503·5	53	805·8
	55	17·88	57	504·1	58	806·3
Dec. 10 14	0	17·20	2	502·3	3	802·1
Dec. 11 6	0	25 22·72	2	513·1	3	869·3
			9	520·0	9	866·0
	12	20·60				
	15	21·95	17	514·4	18	870·4
	35	24·44	37	520·0	38	865·2
	40	25·14	42	520·5	43	865·1
	45	26·35	47	515·5	48	865·4
	50	25·12	52	514·9	53	864·3
	55	24·94	57	517·5	58	860·8
Dec. 11 7	0	23·50	2	517·3	3	859·5
	5	23·10				
Dec. 11 8	0	6·05	2	530·6	3	867·9
	5	7·11	7	529·0	8	865·0
	10	8·51	12	529·8	13	860·0
	15	10·48	17	527·4	18	857·8
	20	12·43	22	526·6	23	855·7
	25	13·89	27	525·1	28	852·3
	30	15·41	32	525·4	33	848·5
Dec. 11 10	0	19·34	2	510·6	3	852·5
	10	18·06	12	507·6	13	856·4
	15	17·59	17	510·0	18	855·7
	20	15·99	22	512·4	23	853·8
	25	15·16	27	513·3	28	855·2
	30	15·02	32	514·6	33	853·5
	35	15·10	37	515·4	38	853·1
	40	13·89	42	516·5	43	849·2
	45	12·45	47	517·1	48	845·5
	50	10·58	52	515·3	53	847·3
	55	11·05	57	518·4	58	844·8
Dec. 11 11	0	10·83	2	516·1	3	845·5
	5	11·35	7	514·5	8	845·0
	10	13·10	12	521·3	13	837·9
	15	15·52	17	534·3	18	827·9
	20	20·41	22	535·4	23	818·9
	25	22·43	27	531·5	28	811·4
	30	23·68	32	521·8	33	808·0
	35	23·32	37	511·1	38	806·4
	40	20·32	42	507·0	43	802·0
	45	16·28	47	512·7	48	794·2
	50	13·96	52	515·1	53	793·7
	55	14·95	57	518·8	58	791·3
Dec. 11 12	0	16·01	2	525·4	3	788·7

BIFILAR. $k=0·0001300$. BALANCE. $k=0·000014$ approximately.

$\left.\begin{matrix}\text{BIFILAR THERMOMETER.}\\ \text{BALANCE THERMOMETER.}\end{matrix}\right\}$ Dec. $8^d\ 9^h$, $\left\{\begin{matrix}46^\circ{\cdot}8\\47^\circ{\cdot}5\end{matrix}\right.$; $9^d\ 9^h$, $\left\{\begin{matrix}46^\circ{\cdot}8\\47^\circ{\cdot}5\end{matrix}\right.$; $10^d\ 13^h$, $\left\{\begin{matrix}46^\circ{\cdot}0\\46^\circ{\cdot}5\end{matrix}\right.$; $10^d\ 14^h$, $\left\{\begin{matrix}46^\circ{\cdot}0\\47^\circ{\cdot}0\end{matrix}\right.$; $11^d\ 11^h$, $\left\{\begin{matrix}48^\circ{\cdot}0\\48^\circ{\cdot}7\end{matrix}\right.$.

Dec. 10^d. (Sunday). It having been observed that the magnets were disturbed to-day, observations were commenced at midnight (Monday morning).

Dec. $11^d\ 10^h\ 20^m$. Auroral light to NNW.

Göttingen Mean Time.	DECLINATION. Min. of Obs.	DECLINATION. Reading Reduced.	BIFILAR. Min. of Obs.	BIFILAR. Reading Corrected.	BALANCE. Min. of Obs.	BALANCE. Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Dec. 11 12	5	25 17·72	7	524·5	8	787·5
	10	16·46	12	525·0	13	781·5
	15	13·91	17	525·2	18	779·0
Dec. 11 18	0	21·29	2	505·7	3	826·1
	14	20·60				
	20	22·74	22	512·2	23	827·6
	25	23·44	27	512·2	28	830·1
	30	23·27	32	511·2	33	829·7
Dec. 11 19	5	19·09	7	519·0		
	10	20·77	12	517·8	13	836·0
	15	20·92	17	515·9	18	836·6
	20	20·30	22	516·4		
Dec. 11 20	0	21·28	2	518·9	3	834·0
Dec. 12 2	0	27·87	2	510·7	3	851·8
	20	29·39	22	499·9	23	865·6
	25	26·72	27	493·5	28	869·1
	30	24·28	32	498·1	33	872·0
	35	24·10	37	498·6	38	876·2
	40	21·44	42	499·8	43	876·3
	45	20·88	47	505·3	48	878·4
	50	20·57	52	496·2	53	883·0
	55	18·57	57	498·6	58	881·7
Dec. 12 3	0	17·14	2	505·1	3	,,
	5	17·17	7	510·2	8	,,
	10	18·82	12	515·6	13	884·0
	15	20·50	17	512·8	18	,,
	20	20·75	22	512·8	23	883·2
Dec. 12 4	0	21·98	2	515·7	3	887·4
	10	23·70	12	512·3	13	887·4
Dec. 12 6	0	14·78	2	517·4	3	869·9
	5	16·43	7	511·2	8	870·4
	10	14·98	12	506·7	13	870·1
	15	12·83	17	509·6	18	868·9
	20	11·91	22	513·3	23	865·8
	25	10·18	27	519·2	28	863·3
	30	10·88	32	522·9	33	864·5
	35	12·68	37	519·0	38	864·4
	40	12·48	42	517·5	43	863·9
	45	12·61	47	514·0	48	866·1
	50	14·51	52	511·3	53	868·3
	55	14·98	57	512·9	58	868·4
Dec. 12 7	0	15·23	2	509·2	3	,,
	5	14·06	7	512·2	8	866·1
	10	13·61	12	513·0	13	,,
	15	13·30	17	514·8	18	,,
	20	15·02	22	512·6	23	868·1
Dec. 12 8	0	16·55	2	506·2	3	871·1
Dec. 12 10	0	19·39	2	513·9	3	826·1
	15	16·01	17	512·1	18	826·9
	20	15·22	22	511·4	23	829·2
	25	15·70	27	509·4	28	831·8
	30	16·13	32	508·3	33	832·9
Dec. 13 8	0	25 13·62	2	504·8	3	881·4
	5	14·55	7	507·3	8	879·4
Dec. 13 8	10	25 15·19	12	507·0	13	879·5
	15	16·37	17	507·7	18	878·8
	30	17·07	32	507·5	33	873·1
Dec. 13 10	0	21·28	2	512·6	3	849·7
	10	18·55	12	518·7	13	846·1
	15	19·36	17	517·3	18	843·6
	20	19·58	22	516·8	23	845·3
Dec. 21 10	0	25 8·55	2	522·1	3	820·7
	5	9·81	7	520·8	8	823·4
	10	11·44	12	516·6	13	827·8
	15	13·15	17	513·4	18	830·2
	20	13·79	22	512·6	23	831·2
	25	15·03	27	512·6	28	,,
	30	14·78	32	513·1	33	830·2
	35	14·11	37	516·6	38	827·5
	40	13·41	42	519·5	43	824·9
	45	13·00	47	519·5	48	823·5
	50	13·08	52	518·3	53	822·7
	55	13·14	57	516·1	58	823·4
Dec. 21 11	0	13·24	2	514·3	3	821·0
Dec. 21 12	0	16·98	2	516·2	3	818·4
Dec. 26 23	0	25 21·24	2	510·9	3	829·4
	35	23·86	37	514·7	38	828·2
Dec. 27 0	0	22·65	2	513·5	3	830·1
Dec. 27 6	0	20·81	2	503·1	3	876·4
	10	21·04	12	501·2	13	883·4
	15	20·68	17	501·3	18	885·7
	20	20·85	22	504·1	23	887·3
	25	22·11	27	502·6	28	889·3
	30	20·52	32	502·4	33	891·2
	35	20·52	37	501·2	38	894·8
	50	19·61	52	504·3	53	902·5
Dec. 27 7	0	20·58	2	512·3	3	894·5
	5	21·71	7	514·8	8	893·4
	10	23·06	12	512·3	13	894·6
	15	23·70	17	511·4	18	892·1
	20	23·32	22	509·3	23	892·9
	25	22·45	27	507·5	28	892·3
	30	21·04	32	507·3	33	890·2
	40	18·26	42	509·3	43	888·7
	45	17·88	47	510·3	48	888·3
	50	17·38	52	512·3	53	886·2
Dec. 27 8	0	17·92	2	513·6	3	885·1
Dec. 27 22	0	25 24·60	2	511·7	3	834·7
	30	24·99	32	512·7	33	830·3
Dec. 27 23	0	23·07	2	516·5	3	827·5
Dec. 28 0	0	23·07	2	511·9	3	839·6
Dec. 28 1	15	25·78	17	511·0	18	843·8
	20	26·40	22	512·9	23	843·7
	25	23·88	27	509·5	28	842·9
	30	24·99	32	508·9	33	846·0
	35	26·62				

BIFILAR. k=0·0001300. BALANCE. k=0·000014 approximately.

BIFILAR THERMOMETER. BALANCE THERMOMETER. $\Big\}$ Dec. $11^d\ 12^h$, $\left\{\begin{array}{l}48^{\circ}\cdot0\\48^{\circ}\cdot9\end{array}\right.$; $12^d\ 3^h$, $\left\{\begin{array}{l}47^{\circ}\cdot0\\47^{\circ}\cdot5\end{array}\right.$; $12^d\ 7^h$, $\left\{\begin{array}{l}47^{\circ}\cdot1\\48^{\circ}\cdot0\end{array}\right.$; $21^d\ 11^h$, $\left\{\begin{array}{l}53^{\circ}\cdot9\\55^{\circ}\cdot0\end{array}\right.$; $21^d\ 12^h$, $\left\{\begin{array}{l}53^{\circ}\cdot1\\\ldots\ldots\end{array}\right.$; $27^d\ 7^h$, $\left\{\begin{array}{l}46^{\circ}\cdot9\\47^{\circ}\cdot0\end{array}\right.$; $28^d\ 1^h$, $\left\{\begin{array}{l}44^{\circ}\cdot2\\44^{\circ}\cdot9\end{array}\right.$

Dec. $12^d\ 2^h\ 20^m$. *et seq.* The Declination and Bifilar Magnets vibrating irregularly 2 to 5 Scale division.
Dec. $21^d\ 10^h$. Continued from the Term Observations.
Dec. $27^d\ 6^h$. Faint Auroral light to N. ?

Göttingen Mean Time.	DECLINATION.		BIFILAR.		BALANCE.	
	Min. of Obs.	Reading Reduced.	Min. of Obs.	Reading Corrected.	Min. of Obs.	Reading Corrected.
d. h.	m.	° ′	m.	Sc. Div.	m.	Mic. Div.
Dec. 28 1	37	25 28·03	37	510·9	38	851·7
	40	28·72				
	42	27·96	42	510·8	43	853·7
	45	28·37				
	47	27·90	47	509·9	48	855·1
	50	27·83	52	502·1	53	859·2
	55	23·97	57	500·5	58	864·4
Dec. 28 2	0	23·32	2	506·0	3	866·3
	5	22·35	7	511·8	8	865·4
	10	23·23	12	511·6	13	866·6
	15	23·93	17	513·1	18	866·8
	20	25·39	22	510·5	23	869·3
	25	26·08	27	509·8	28	869·4
	30	26·77	32	514·7	33	868·9
	35	28·52				
	37	29·31	37	516·3	38	870·0
	40	30·51				
	42	30·65	42	516·0	43	871·9
	45	30·62	47	513·9	48	873·1
	50	30·76				
	52	30·85	52	512·3		
	55	30·74	57	505·9	58	876·3
Dec. 28 3	0	28·80	2	507·6		
Dec. 28 2	5	25 27·40	7	511·3	8	876·6
	10	27·22	12	511·8		
	15	26·67	17	512·0	18	879·5
	20	26·59	22	510·7		
	25	25·95	27	509·9	28	880·4
	30	25·38	32	509·3		
	35	24·69	37	509·1		
	40	23·81	42	508·5	43	881·3
	45	22·47	47	509·6	48	880·9
	50	21·31	52	511·8	53	880·4
	55	21·26	57	514·4		
Dec. 28 4	0	21·41	2	515·3	3	878·0
Dec. 29 10	0	25 12·50	2	508.6	3	837·9
	10	13·84	12	511·7	13	838·5
	15	14·75	17	511·2		
	20	15·19	22	511·8	23	838·2
	35	16·47	37	514·4	38	836·8
	40	17·07				
Dec. 30 10	0	25 15·22	2	514·2	3	849·8
	10	16·38	12	514·6	13	849·4
	25	16·60	27	515·4		

BIFILAR. $k=0·0001300$. BALANCE. $k=0·000014$ approximately.

BIFILAR THERMOMETER.	Dec. 29^{d} $10\frac{1}{2}^{h}$,	……
BALANCE THERMOMETER.		47°·2

OBSERVATIONS OF MAGNETIC DIP.

MAKERSTOUN OBSERVATORY,

1843.

Göttingen Mean Time, Middle of Observation.	Duration of Observation.	Needle. Number.	Needle. Temperature.	Needle. End dipping.	Face of Circle E. Mark on Needle E.	Face of Circle E. Mark on Needle W.	Face of Circle W. Mark on Needle E.	Face of Circle W. Mark on Needle W.	Mean.	A. dipping *Minus* B. dipping.	Observed Dip.
d. h. m.	m.		°		° ′	° ′	° ′	° ′	° ′	′	° ′
Jan. 2 21 0	58	1	33	A	69 52·0	73 36·5	69 32·5	73 25·5	71 36·62	+34·37	71 19·44
				B	72 57·0	69 27·0	72 27·5	69 17·5	71 2·25		
Jan. 6 6 0	50	1	59	B	73 1·0	69 28·0	73 0·0	69 19·0	71 12·00	+19·87	71 21·94
				A	69 42·0	73 37·0†	69 25·0	73 23·5	71 31·87		
Jan. 9 22 45	25	1	47	A	69 52·0	73 37·0	69 28·0	73 26·5	71 35·87	+29·62	71 21·06
				B	73 0·0	69 28·0	72 44·0	69 13·0	71 6·25		
Jan. 13 7 5	45	1	52	B	72 58·0	69 29·0	72 50·0	69 15·5	71 8·12	+26·00	71 21·12
				A	69 46·0	73 43·0	69 29·0	73 18·5	71 34·12		
Jan. 16 22 45	65	1	53	A	69 51·0	73 36·5	69 26·0	73 12·0	71 31·37	+22·12	71 20·31
				B	72 59·5	69 36·0	72 43·0	69 18·5	71 9·25		
Jan. 20 3 5	43	1	58	B	73 7·5	69 39·5	73 45·0	69 15·0	71 11·75	+21·00	71 22·25
				A	70 13·5	73 8·0	69 54·0	72 55·5	71 32·75		
Jan. 23 23 5	70	1	56	A	70 14·5	73 13·0	69 51·0	72 55·5	71 33·50	+22·75	71 22·12
				B	72 56·5	69 44·5	72 36·0	69 26·0	71 10·75		
Jan. 28 3 20	57	1	57	B	72 58·5	69 40·0	72 40·0	69 26·5	71 11·25	+20·37	71 21·44
				A	70 9·0	73 16·5	69 44·0	72 57·0	71 31·62		
Jan. 30 22 35	25	1	57	A	70 0·0	73 16·0	69 38·5	73 30·5	71 36·25	+29·00	71 21·75
				B	73 1·0	69 30·5	72 46·5	69 11·0	71 7·25		
Feb. 3 3 35	35	1	53	B	73 7·0	69 17·5	72 51·0	69 14·5	71 7·50	+29·00	71 22·00
				A	70 2·5	73 25·5	69 36·0	73 22·0	71 36·50		
Feb. 6 23 0	50	1	50	A	70 3·5	73 34·5	69 37·0	73 20·0†	71 38·75	+31·50	71 23·00
				B	72 58·5	69 27·5	72 39·0	69 24·0	71 7·25		
Feb. 10 3 10	50	1	55	B	72 56·0	69 47·5	72 35·5	69 11·0	71 7·50	+26·00	71 20·50
				A	70 15·5	73 14·0	69 52·5	72 52·0	71 33·50		
Feb. 13 22 45	40	1	45	A	70 16·0	73 9·0	69 49·0	72 58·0	71 33·00	+21·38	71 22·31
				B	73 8·0	69 41·0	72 47·5	69 10·0†	71 11·62		
Feb. 17 3 35	28	1	55	B	73 7·5	69 27·0	72 49·0	69 11·0	71 8·62	+29·13	71 23·19
				A	70 8·5	73 23·5	69 48·0	73 11·0	71 37·75		
Feb. 20 22 40	48	1	47	A	70 15·0	73 23·0	69 44·0	73 5·0	71 36·75	+23·13	71 25·19
				B	72 59·5	69 46·5	72 38·0	69 30·5	71 13·62		
Feb. 27 22 32	35	1	46	B	72 56·0	69 46·0	72 31·5	69 25·5	71 9·75	+24·87	71 22·19
				A	70 2·5	73 27·0	69 33·0	73 16·0	71 34·62		
Mar. 3 5 30	40	1	54	A	70 2·0	73 22·0	69 32·5	73 6·5	71 30·75	+19·50	71 21·00
				B	73 10·0	69 36·5	72 46·0	69 12·5	71 11·25		
Mar. 10 3 30	60	1	52	B	73 6·5	69 35·0	72 49·0	69 19·0	71 12·37	+22·38	71 23·56
				A	70 19·0	73 14·5	69 47·5	72 58·0	71 34·75		
Mar. 13 22 35	30	1	50	A	70 15·0	73 18·0	69 46·0	72 55·5	71 33·62	+27·00	71 20·12*
				B	73 2·0	69 40·0	72 31·0	69 13·5	71 6·62		
Mar. 17 3 20	35	1	47	B	73 0·0	69 44·5	72 39·5	69 15·0	71 9·75	+23·00	71 21·25*
				A	70 4·5	73 28·0	69 32·5	73 6·0	71 32·75		
Mar. 20 23 0	65	1	46	A	70 4·0	73 27·5	69 36·5	73 6·5	71 33·62	+21·87	71 22·69
				B	73 3·0	69 45·0	72 37·0	69 22·0	71 11·75		
Mar. 24 3 30	53	1	46	B	73 2·5	69 44·5	72 35·5	69 12·5	71 8·75	+26·87	71 22·19
				A	70 12·5	73 21·5	69 43·5	73 5·0	71 35·62		
Mar. 31 3 10	45	1	54	A	70 11·5	73 22·0	69 41·0	73 8·0	71 35·62	+24·37	71 23·44
				B	73 0·5	69 45·5	72 30·0	69 29·0	71 11·25		
Apr. 3 23 0	60	1	46	B	72 57·0	69 46·0	72 31·0	69 25·5	71 9·87	+24·25	71 22·00
				A	70 7·5	73 19·0	69 46·5	73 3·5	71 34·12		
Apr. 7 3 0	40	1	50	A	70 11·5	73 20·0	69 47·5	73 4·0	71 35·75	+26·00	71 22·75
				B	72 59·5	69 44·0	72 33·5	69 22·0	71 9·75		
Apr. 10 23 15	45	1	36	B	72 59·5	69 43·0	72 32·0	69 20·0	71 8·62	+26·63	71 21·94
				A	70 9·0	73 22·0	69 45·0	73 5·0	71 35·25		
Apr. 14 3 20	...	1	53	A	70 9·0	73 26·5	69 40·0	73 3·5	71 34·75	+23·63	71 22·94
				B	73 4·5	69 44·0	72 38·5†	69 17·5	71 11·12		
Apr. 18 0 40	45	1	53	B	73 7·0	69 39·5	72 39·5	69 12·0	71 9·50	+24·62	71 21·81*
				A	70 10·0	73 31·5	69 31·0	73 4·0	71 34·12		

* Observations considered good.

† Observations considered bad or doubtful.

Jan. 16ᵈ 22ʰ. In changing the poles of the needle the wrong end was at first taken, so that A. north was strengthened; the poles were afterwards reversed.

Göttingen Mean Time, Middle of Observation.	Duration of Observation.	NEEDLE.			FACE OF CIRCLE E.		FACE OF CIRCLE W.		Mean.	A. dipping *Minus* B.dipping.	Observed Dip.	Observer's Initial.
		Number.	Temperature.	End dipping.	Mark on Needle E.	Mark on Needle W.	Mark on Needle E.	Mark on Needle W.				
d. h. m.	m.		°		° ′	° ′	° ′	° ′	° ′	′	° ′	
Apr. 21 3 10	48	1	57	B	73 6·5	69 46·0	72 37·5	69 14·5	71 11·12	+23·50	71 22·87	W
				A	70 4·0	73 27·0	69 44·0	73 3·5	71 34·62			
Apr. 24 23 0		1	47	A	70 1·0	73 30·0	69 41·0	73 12·5	71 36·12	+29·62	71 21·31	B
Apr. 25 3 0				B	73 20·0	69 16·0	72 51·0	68 59·0	71 6·50			
May 1		1	...	B	73 35·5	69 19·0	72 52·0	68 40·5	71 6·75	+28·75	71 21·12*	B
				A	70 1·0	73 38·0	69 29·0	73 14·0	71 35·50			
May 5 3 25	45	1	53	A	70 9·0	73 41·0	69 28·0	73 12·5	71 37·62	+27·62	71 23·81	W
				B	73 22·5	69 31·5	72 35·0	69 11·0	71 10·00			
May 15 22 45	53	1	48	B	73 28·5	69 33·5	72 36·5	68 54·0	71 8·12	+30·00	71 23·12	W
				A	70 8·5	73 36·5	69 34·0	73 13·5	71 38·12			
May 20 3 0	...	1	51	A	70 8·0	73 33·5	69 33·0	73 7·5	71 35·50	+25·50	71 22·75	W
				B	73 16·5	69 32·0	72 36·5	69 15·0	71 10·00			
May 26 3 25	40	1	58	B	73 17·5	69 37·0	72 40·0	69 5·5	71 10·00	+25·25	71 22·62*	B
				A	70 13·5	73 28·0	69 39·0	73 0·5	71 35·25			
May 30 23 15	60	1	48	A	70 9·5	73 27·5	69 38·0	73 6·5	71 35·37	+27·37	71 21·69*	W
				B	73 21·0	69 20·0	72 50·0	69 1·0	71 8·00			
June 2 3 40	55	1	56	B	73 30·5	69 13·0	72 57·0	68 56·5	71 9·25	+27·75	71 23·12	W
				A	70 11·0	73 26·5	69 41·5	73 9·0	71 37·00			
June 5 22 35	40	1	48	A	70 13·0	73 30·0	69 46·0	73 7·5	71 39·12	+26·25	71 26·00†	B
				B	73 22·0	69 34·0	72 47·5	69 8·0	71 12·87			
June 9 3 40	52	1	56	B	73 29·5	69 26·0	72 56·0	69 9·5	71 15·25	+23·87	71 27·19†	W
				A	70 4·0	73 30·0	69 44·0	73 18·5	71 39·12			
June 9 23 30	60	1	...	A	70 13·5	73 29·0	69 41·5	73 6·5	71 37·62	+32·25	71 21·50†	W
				B	73 46·0	69 25·0	72 36·5	68 34·0	71 5·37			
June 12 22 50	...	1	...	B	73 46·5	69 24·5	72 44·5	68 33·5	71 7·25	+31·37	71 22·94*	W
				A	70 6·0	73 43·5	69 32·5	73 12·5	71 38·62			
June 16 3 50	52	1	76	A	70 5·5	73 39·5	69 31·5	73 16·0	71 38·12	+32·37	71 21·94	W
				B	73 46·0	69 21·5	72 37·5	68 38·0	71 5·75			
June 19 22 35	18	1	63	B	73 51·0	69 24·5	72 48·5	68 34·5	71 9·62	+28·38	71 23·81*	B
June 20 0 20	20	1	70	A	70 8·5	73 18·0	69 44·5	73 21·0	71 38·00			
June 23 7 10	40	1	74	A	70 4·5	73 34·0	69 39·5	73 13·5	71 37·87	+29·37	71 23·19*	B
				B	73 55·0	69 20·0	72 39·5	68 39·5	71 8·50			
June 26 22 55	50	1	58	B	73 48·0	69 26·0†	72 43·5	68 39·5	71 9·25	+29·75	71 24·12	W
				A	70 12·5	73 32·0	69 37·0	73 14·5	71 39·00			
June 30 4 0	...	1	64?	A	70 8·5	73 32·0	69 40·0	73 18·5	71 39·75	+33·88	71 22·81	W
				B	74 38·0	68 29·5	73 20·0	67 56·0†	71 5·87			
July 3 23 30	70	1	67	B	74 50·0	68 31·0	73 43·5	67 32·0	71 9·12	+28·50	71 23·37†	B
				A	70 4·5	73 36·0	69 31·0	73 19·0	71 37·62			
July 10 23 10	60	1	70	A	70 2·5	73 42·0	69 35·0	73 23·5	71 40·75	+29·38	71 26·06	W
				B	74 6·0	69 8·5	72 54·5	68 36·5	71 11·37			
July 14 3 45	52	1	74	B	74 6·0	69 5·0	72 57·0	68 28·5	71 9·12	+34·00	71 26·12	W
				A	69 48·0	73 58·0	69 22·5	73 44·0	71 43·12			
July 21 8 0	45	1	67	A	69 46·0	74 7·5	69 19·0	74 27·5	71 55·00	+43·38	71 33·31†	B
				B	73 43·5	69 23·0	72 59·0	68 41·0	71 11·62			
July 25 0 35	50	1	70?	B	73 56·5	69 21·5	72 47·0	68 51·0	71 14·00	+27·00	71 27·50	W
				A	69 58·0	73 36·5	69 18·0	73 51·5	71 41·00			
July 26 2 10	60	1	66	A	69 54·5	73 51·0	69 11·5	73 53·0	71 42·50	+25·25	71 29·87†	B
				B	74 0·0	69 32·0	72 46·0	68 51·0	71 17·25			
July 28 3 50	...	1	...	B	73 49·5	69 32·5	72 46·5	68 51·0	71 14·87	+27·63	71 28·69	W
				A	69 40·0	74 6·0	68 59·5	74 4·5?	71 42·50			
Aug. 1 4 0	180	1	62	A	69 18·5	74 10·0	69 9·0	74 10·5	71 42·00	+24·13	71 29·94†	B
				B	73 5·5	69 37·0	73 4·0	69 25·0	71 17·87			
Aug. 4 3 40	55	1	74	B	73 11·5	69 27·0	72 34·0	69 22·5	71 8·75	+25·87	71 21·69*	W
				A	68 58·5	74 12·0	68 55·0	74 13·0	71 34·62			
Aug. 7 23 0	60	1	65	A	68 48·0	74 17·0	68 53·5	74 14·5	71 33·25	+20·13	71 23·19	W
				B	73 39·0	69 5·5	73 4·5	69 3·5	71 13·12			

* Observations considered good. † Observations considered bad or doubtful.

May 30d. The Dip instrument was removed from the Magnetic Observatory to the wooden house erected for it and the extra declinometer. See *Introduction*.

June 5d—Sept. 12. The Dip instrument during this period worked imperfectly, chiefly in lifting the needle. See *Introduction* for details.

Göttingen Mean Time, Middle of Observation.	Duration of Observation.	NEEDLE.			FACE OF CIRCLE E.		FACE OF CIRCLE W.		Mean.	A. dipping *Minus* B. dipping.	Observed Dip.	Observer's Initial.
		Number.	Temperature.	End dipping.	Mark on Needle E.	Mark on Needle W.	Mark on Needle E.	Mark on Needle W.				
d. h. m.	m.		°		° ′	° ′	° ′	° ′	° ′	′	° ′	
Aug. 14 23 45	120	1	61	B	73 36·5	68 51·0	73 5·0	68 51·0	71 5·87	+ 35·00	71 23·37*	B
				A	69 42·5	73 30·0	69 56·0	73 35·0	71 40·87			
Aug. 18 8 5	40	1	73	A	69 41·0	73 35·0	69 41·0	73 30·0	71 36·75	+ 25·63	71 23·94*	B
				B	73 16·5	69 26·5	72 44·5	69 17·0	71 11·12			
Aug. 21 22 45	60	1	57	B	73 12·0	69 17·5	72 50·5	69 17·0	71 9·25	+ 23·50	71 21·00*	W
				A	68 45·0	74 13·5	68 59·5	74 13·0	71 32·75			
Aug. 25 3 40	...	1	79	A	68 36·0	74 10·0	68 56·5	74 22·5	71 31·25	+ 43·50	71 9·50†	W
				B	73 58·5	67 42·5	73 16·0	68 14·0	70 47·75			
Aug. 25 7 0	...	1	66	B	74 4.0	67 32·5	73 22·0	68 20·0	70 49·62	+ 45·88	71 12·56†	B
				A	69 40·5	73 20·0	69 46·5	73 35·0	71 35·50			
Aug. 28 22 40	55	1	66	A	69 44·5	73 27·5	69 41·0	73 33·5	71 36·62	+ 19·00	71 27·12†	B
				B	73 21·0	69 40·0	72 58·0	69 11·5	71 17·62			
Sept. 4 23 0	45	1	73	B	73 22·0	69 36·0	72 53·5	69 11·0	71 15·62	+ 20·63	71 25·94*	W
				A	69 37·5	73 31·5	69 35·0	73 41·0	71 36·25			
Sept. 8 8 0	45	1	77	A	69 33·0	73 31·0	69 34·5	73 44·5	71 35·75	+ 30·25	71 20·62	W
				B	74 3·5	68 32·5†	73 25·0	68 21·0	71 5·50			
Sept. 12 1 5	110	1	75	B	73 49·0	68 19·0†	74 3·5	68 44·0	71 13·87	+ 16·75	71 22·25†	B
				A	69 49·5	73 15·5	69 51·5	73 6·0	71 30·62			
Oct. 6 3 10	55	1	66	A	68 11·5	72 54·0	68 29·5	73 8·0	70 40·75	−110·37	71 35·94†	W
				B	75 6·0	69 47·0	75 16·5	69 55·0	72 31·12			
Oct. 8 23 10	50	2	53	B	71 56·0	71 10·0	71 49·0	71 21·0	71 34·00	− 30·38	71 18·81†	W
				A	70 9·0	71 50·5	70 8·5	72 6·5	71 3·62			
Oct. 9 0 45	50	1	56	B	75 10·0	69 54·0	75 13·0	70 0·0	72 34·25	−104·50	71 42·00	B
				A	68 16·5	73 17·5†	68 17·5	73 27·5	70 49·75			
Oct. 9 2 20	60	2	55	A	70 6·0	71 57·0	70 17·5	72 5·0	71 6·37	− 23·63	71 18·19	B
				B	71 59·0	70 56·5	72 4·5	71 0·0	71 30·00			
Nov. 20 1 30	...	1	40	A	68 22·5	73 5·5	68 8·0	73 8·0	70 41·00	− 89·62	71 25·81	W
				B	74 29·0	69 47·0	74 35·0	69 51·5	72 10·62			
Nov. 20 3 5	95	1	...	B	74 34·5	70 3·7	74 23·8	69 58·6	72 15·15	− 92·15	71 29·08	B
				A	68 32·6	72 58·3	68 25·7	72 55·4	70 43·00			
Nov. 21 1 35	50	2	...	B	71 55·1	71 16·2	71 55·4	71 13·0	71 34·92	− 16·42	71 26·71	W
				A	70 49·5	71 59·2	70 39·0	71 46·3	71 18·50			
Nov. 22 0 0	...	2	...	B	71 49·0	71 25·5	71 38·3	71 19·9	71 33·17	− 14·05	71 26·15	B
				A	70 53·5	72 2·1	70 40·3	71 40·6	71 19·12			
Nov. 24 3 10	55	2	42	A	70 50·0	72 1·5	70 37·5	71 38·5	71 16·87	− 12·63	71 23·19*	W
				B	71 34·0	71 22·5	71 44·5	71 17·0	71 29·50			
Nov. 28 0 0	100	2	50	B	71 51·0	71 15·6	71 42·9	71 12·9	71 30·60	− 11·15	71 25·02	B
				A	71 5·2	71 42·0	70 55·3	71 35·3	71 19·45			
Dec. 1 3 50	60	2	39	A	70 47·0	71 52·5	70 49·0	71 53·7	71 20·55	− 10·40	71 25·75	B
				B	71 57·2	71 16·0	71 48·3	71 2·3	71 30·95			
Dec. 4 23 15	70	2	48	B	71 52·0	71 16·0	71 47·5	71 2·5	71 29·50	− 15·75	71 21·62	W
				A	70 30·5	72 27·0	70 6·0	71 51·5	71 13·75			
Dec. 8 3 35	48	2	48	A	70 28·0	72 24·0	70 7·0	71 51·0	71 12·50	− 18·25	71 21·62	W
				B	71 56·5	71 18·0	71 44·5	71 4·0	71 30·75			
Dec. 12 1 0	...	2	49	B	71 58·0	71 20·5	71 50·0	71 8·0	71 34·12	− 12·50	71 27·87	B
				A	71 5·5	71 59·5	70 45·5	71 36·0†	71 21·62			
Dec. 15 3 40	...	2	50	A	71 5·5	71 59·0	70 51·0	71 40·0	71 23·87	− 13·88	71 30·81†	B
				B	72 5·0	71 22·0	71 53·0	71 11·0	71 37·75			
Dec. 18 23 15	60	2	42	B	72 6·0	71 20·0	71 45·5	70 59·5	71 32·75	− 15.25	71 25·12	W
				A	70 47·0	72 14·0	70 26·0	71 43·0	71 17·50			
Dec. 22 2 30	45	2	50	A	70 54·0	72 13·0	70 23·0	71 40·5	71 17·62	− 15·00	71 25·12	W
				B	71 55·5	71 29·5	71 37·5	71 8·0	71 32·62			
Dec. 27 0 15	60	2	48	B	72 5·0	71 30·5	71 43·0	71 4·0	71 35·62	− 17·87	71 26·69*	B
				A	71 6·0	71 59·0	70 39·0	71 27·0	71 17·75			
Dec. 29 3 55	70	2	47	A	71 8·0	72 3·7	70 42·9	71 26·7	71 20·32	− 15·43	71 28·03*	B
				B	72 7·0	71 28·0	71 44·0	71 4·0	71 35·75			

* Observations considered good. † Observations considered bad or doubtful.

Aug. 18d 8h. A first attempt to change the poles of the needle failed, probably from the wrong end of the needle being taken.
Sept. 12d—Oct. 6d. The dip instrument and needles sent to Messrs Adie and Son, Edinburgh, to be adjusted.
Oct. 9d—Nov. 20d. The observations in October were so unsatisfactory that they were discontinued for some time.
Nov 24d 3h. Before this observation the instrument was levelled, as it was previously slightly out of adjustment.

OBSERVATIONS

OF

ABSOLUTE HORIZONTAL INTENSITY.

MAKERSTOUN OBSERVATORY,
1843.

COMPARATIVE OBSERVATIONS FOR DEFLECTIONS.

Göttingen Mean Time of Observation.		DEFLECTING BAR.				DECLINOMETER.								BIFILAR MAGNETOMETER.				
		Distance = r.		N. Pole.	Temperature.	Reading.	Reduced to Unifilar.	Unifilar Reading.	Deflection.	Deflection corrected for Torsion.			Coefficient for Temp. at Deflection *Minus* Temp. at Vibration.	Reading Corrected.	Thermometer.	Mean Reading *Minus* 500 Sc. Div., in parts of force.	Log. tan. (Deflection) corrected, = tan. u.	Log. ½ r³ tan. u.
d.	h. m.	Feet.			°	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	° ′ ″			Sc. Div.	°			
Aug. 11	2 16	5·000	E	E	70·8	141·94	142·16	486·15	233·78	234·28	2 37 33·2	0·999516	516·8	65·0	+0·000157	8·6613159	0·4571959
	2 40			W	68·0	143·41	143·80	23·05					497·2	65·0			
	3 48		W	E	65·0	151·42	152·73	499·41					500·7	65·2			
	2 58			W	67·8	144·93	145·49	21·79					490·4	65·6			
	6 40	5·500	E	E	64·0	155·32	157·07	445·67	176·02	176·39	1 58 37·4	0·998746	513·2	65·2	+0·001868	8·5383352	0·4583933
	6 18			W	64·0	154·21	155·85	92·90					518·0	66·6			
	5 20		W	E	67·0	152·49	153·92	442·17					517·5	66·2			
	5 55			W	66·0	153·60	155·16	90·89					513·2	66·6			
	7 16	6·500	E	E	64·0	158·21	160·30	379·97	107·42	107·65	1 12 23·7	0·998148	501·0	66·5	+0·000904	8·3230870	0·4607971
	7 31			W	63·3	159·46	161·69	167·29					507·3	66·4			
	8 20		W	E	62·2	156·07	157·91	377·84					510·7	66·2			
	7 53			W	62·9	158·60	160·73	165·05					511·2	66·3			
	0 29	Magnet away				145·28	145·89	257·54	(Diff.) 111·65								
	0 43					145·18	145·78	257·59	111·81								
	1 12					143·95	144·41	256·19	111·78								
	8 47					155·75	157·56	270·16	112·60								
Aug. 20	23 31	5·000	E	E	62·0	149·72	150·83	491·12	234·06	234·56	2 37 44·5	1·000171	495·3	58·6	−0·000217	8·6619575	0·4578375
	23 52			W	61·9	147·97	148·89	22·30					496·9	58·9			
Aug. 21	0 20		W	E	62·0	146·23	146·94	487·80					501·7	59·5			
	0 6			W	61·1	147·00	147·80	19·27					498·9	59·0			
	1 3	5·500	E	E	62·2	144·62	145·15	426·82	175·95	176·32	1 58 34·5	1·000342	508·7	60·0	+0·000687	8·5383382	0·4583963
	0 54			W	63·0	144·87	145·43	76·58					505·8	59·9			
	0 30		W	E	61·2	145·80	146·46	429·40					503·3	59·6			
	0 42			W	63·0	144·87	145·43	75·08					504·9	59·6			
	1 7	6·000	E	E	62·2	144·32	144·81	386·50	135·71	136·00	1 31 27·6	1·000285	509·9	60·0	+0·001494	8·4258317	0·4592555
	1 14			W	62·0	144·60	145·13	116·03					511·9	60·1			
	1 35		W	E	62·0	144·44	144·94	387·36					514·5	60·4			
	1 23			W	62·2	144·23	144·71	115·08					513·5	60·5			
	2 3	6·500	E	E	62·2	145·10	145·68	358·67	106·73	106·96	1 11 55·8	1·000541	518·1	60·9	+0·002000	8·3218017	0·4595118
	1 56			W	63·8	145·00	145·57	145·76					516·4	60·8			
	1 41		W	E	63·0	144·65	145·18	358·62					515·7	60·6			
	1 49			W	63·0	144·65	145·18	144·49					516·4	60·6			
	2 11	7·000	E	E	62·7	145·37	145·99	337·93	85·45	85·63	0 57 35·1	1·000513	518·5	61·0	+0·002253	8·2252757	0·4595398
	2 17			W	62·8	145·90	146·58	168·01					518·2	61·0			
	2 28		W	E	63·0	146·51	147·26	339·73					518·9	61·1			
	2 23			W	63·2	146·00	146·69	167·85					519·0	61·1			
	2 48	7·500	E	E	63·8	147·63	148·50	324·56	69·52	69·67	0 46 51·2	1·000712	519·2	61·3	+0·002265	8·1357845	0·4599383
	2 44			W	63·0	147·13	147·94	185·53					518·7	61·3			
	2 32		W	E	63·8	146·80	147·58	324·05					518·6	61·2			
	2 38			W	64·0	147·00	147·80	184·63					518·8	61·2			
	2 53	8·000	E	E	64·9	147·83	148·73	312·56	57·11	57·23	0 38 29·2	1·000826	519·4	61·4	+0·002302	8·0504108	0·4586508
	2 58			W	65·6	148·11	149·04	198·97					518·3	61·4			
	3 7		W	E	62·2	148·85	149·87	314·17					......	......			
	3 3			W	63·1	148·51	149·48	199·23					519·3	61·6			

COMPARATIVE OBSERVATIONS FOR DEFLECTION.

Göttingen Mean Time of Observation.	Deflecting Bar. Distance = r.	Deflecting Bar.	Deflecting Bar. N. Pole	Deflecting Bar. Temperature.	Declinometer. Reading.	Declinometer. Reduced to Unifilar.	Unifilar Reading.	Deflection.	Deflection corrected for Torsion.	Deflection corrected for Torsion.	Coefficient for Temp. at Deflection *Minus* Temp. at Vibration.	Bifilar Magnetometer. Reading Corrected.	Bifilar Magnetometer. Thermometer.	Bifilar Magnetometer. Mean Reading *Minus* 500 Sc. Div., in parts of force.	Log. tan. (Deflection) corrected, = tan. u.	Log. ½ r³ tan. u.
d. h. m.	Feet.			°	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	° ′ ″		Sc. Div.	°			
Aug. 21 3 22	8·500	E	E	62·0	149·25	150·31	305·21	47·75	47·85	0 32 10·7	1·000342	523·4	61·8	+0·002374	7·9724602	0·4597069
3 19			W	61·8	149·61	150·71	210·30					518·8	61·8			
3 11		W	E	63·1	149·00	150·03	305·15					……	……			
3 15			W	62·2	149·28	150·34	209·77					518·2	61·8			
3 25	9·000	E	E	61·9	149·95	151·09	298·62	40·31	40·40	0 27 10·1	1·000399	518·4	61·8	+0·002868	7·8992146	0·4609121
3 28			W	61·3	150·05	151·21	218·37					……	……			
3 37		W	E	64·0	150·50	151·70	299·36					524·4	61·9			
3 33			W	63·0	148·97	150·00	216·81					528·5	61·9			
3 53	9·500	E	E	60·9	151·61	152·94	294·40	34·26	34·33	0 23 5·2	1·000370	516·3	61·9	+0·002121	7·8281744	0·4603152
3 49			W	62·2	151·31	152·61	225·73					517·4	61·9			
3 41		W	E	63·0	151·20	152·48	294·02					517·4	61·9			
3 45			W	63·5	150·92	152·17	225·00					519·4	61·9			
								(Diff.)								
Aug. 20 23 7	Magnet away				151·14	152·41	258·26	105·85								
Aug. 21 4 10					151·99	153·36	260·94	107·58								
Nov. 8 0 55	5·000	E	E	……	153·97	154·43	494·98	234·64	235·14	2 38 7·9	0·999459	506·0	42·6	+0·000855	8·6631877	0·4590677
1 17			W	42·9	153·69	154·11	27·59					506·5	42·6			
1 39		W	E	40·3	152·76	153·08	495·62					509·7	42·7			
1 27			W	41·0	153·60	154·01	25·06					506·2	42·6			
2 31	5·250	E	E	41·0	154·96	155·53	465·23	202·92	203·35	2 16 45·2	0·999430	506·5	43·0	+0·000711	8·5999544	0·4594023
2 8			W	42·0	156·04	156·74	62·38					504·8	42·9			
1 51		W	E	41·0	153·29	153·67	464·96					508·9	42·8			
2 1			W	41·1	155·00	155·57	59·25					503·3	42·9			
2 29	5·500	E	E	40·2	155·37	155·99	439·77	176·80	177·18	1 59 9·2	0·998917	506·9	43·0	+0·001145	8·5400332	0·4600913
2 14			W	41·2	155·96	156·65	88·15					504·1	42·9			
3 8		W	E	38·6	153·53	153·93	439·05					511·3	43·4			
3 16			W	37·9	152·95	153·29	83·47					515·3	43·5			
3 41	6·000	E	E	36·9	153·05	153·40	396·86	136·46	136·75	1 31 57·9	0·998290	513·8	43·6	+0·001566	8·4273898	0·4608136
3 46			W	36·4	153·00	153·34	125·03					513·1	43·6			
3 33		W	E	37·9	152·26	152·52	396·95					511·4	43·6			
3 28			W	37·9	151·83	152·04	122·39					513·6	43·6			
3 55	6·500	E	E	35·9	153·43	153·82	368·53	107·45	107·68	1 12 24·9	0·997920	511·5	43·6	+0·001265	8·3232648	0·4609749
3 51			W	36·1	152·91	153·24	153·70					512·1	43·6			
4 2		W	E	35·8	153·34	153·73	369·27					510·0	43·6			
4 9			W	36·1	154·03	154·49	154·46					508·3	43·6			
4 24	7·000	E	E	34·7	152·92	153·25	346·60	86·07	86·25	0 58 0·2	0·997635	508·4	43·6	+0·000988	8·2266219	0·4608860
4 30			W	34·9	152·56	152·86	174·70					509·1	43·6			
4 19		W	E	34·7	153·85	154·30	348·47					508·1	43·6			
4 13			W	35·6	154·08	154·55	175·95					507·3	43·6			
4 41	7·500	E	E	34·2	152·48	152·77	330·31	70·16	70·31	0 47 17·0	0·997378	508·3	43·6	+0·001072	8·1377879	0·4619417
4 35			W	34·4	152·59	152·89	190·54					508·0	43·6			
4 47		W	E	34·2	151·99	152·22	330·17					509·9	43·6			
4 51			W	33·8	151·10	151·23	188·40					509·3	43·6			
								(Diff.)								
0 25	Magnet away				155·16	155·75	262·84	107·09								
2 40					154·00	154·46	261·88	107·42								
5 5					151·67	151·86	259·11	107·25								

COMPARATIVE OBSERVATIONS FOR DEFLECTION.

Göttingen Mean Time of Observation.		Deflecting Bar.				Declinometer.		Unifilar Reading.	Deflection.	Deflection corrected for Torsion.		Coefficient for Temp. at Deflection *Minus* Temp. at Vibration.	Bifilar Magnetometer.			Log. tan. (Deflection) corrected. = tan. *u*.	Log. $\frac{1}{2} r^3$ tan. *u*.
		Distance = *r*.		N. Pole	Temperature.	Reading.	Reduced to Unifilar.						Reading Corrected.	Thermometer.	Mean Reading *Minus* 500 Sc. Div., in parts of force.		
d.	h. m.	Feet.			°	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	° ′ ″		Sc. Div.	°			
Nov. 14	4 25	5·125	E	E	41·1	157·52	158·38	484·91	215·57	216·03	2 25 16·8	1·000000	507·6	43·1	+0·001170	8·6266984	0·4547500
	4 30			W	41·1	158·05	158·98	54·91					507·5	43·2			
	4 41		W	E	41·1	158·05	158·98	486·39					510·6	43·2			
	4 35			W	41·1	158·24	159·18	54·91					510·3	43·2			
	3 33	5·250	E	E	40·9	158·34	159·29	471·12	200·40	200·83	2 15 3·5	0·999772	506·4	42·7	+0·001248	8·5949137	0·4543616
	3 38			W	40·5	158·15	159·09	70·50					508·1	42·8			
	3 52		W	E	40·0	158·17	159·11	471·51					513·3	42·9			
	3 47			W	40·0	158·70	159·70	70·89					510·6	42·8			
	5 10	6·750	E	E	40·0	157·61	158·48	364·20	94·68	94·88	1 3 48·4	0·999687	510·4	43·5	+0·001456	8·2691382	0·4560195
	5 5			W	40·0	157·60	158·47	175·08					510·9	43·3			
	4 55		W	E	40·3	157·65	158·53	364·57					511·8	43·3			
	4 59			W	39·9	157·37	158·22	174·63					511·8	43·3			
	4 16	7·000	E	E	41·0	156·83	157·61	353·77	84·91	85·09	0 57 13·4	0·999886	511·6	43·1	+0·001755	8·2220514	0·4563155
	4 11			W	41·0	156·47	157·21	183·69					513·0	43·1			
	4 0		W	E	40·0	156·31	157·03	353·50					515·8	43·0			
	4 6			W	41·0	156·15	156·86	183·35					513·6	43·0			
									(Diff.)								
	3 3	Magnet away				156·51	157·26	270·09	112·83								
	3 18					157·42	158·27	270·48	112·21								
	5 18					158·61	159·60	270·78	111·18								
Dec. 18	1 25	5·000	E	E	48·9	154·71	155·25	487·92	233·30	233·80	2 37 13·8	1·000456	516·5	45·2	+0·002143	8·6614942	0·4573742
	1 31			W	48·4	154·25	154·74	20·29					516·6	45·2			
	2 11		W	E	47·4	154·17	154·65	488·54					516·4	45·3			
	2 43			W	47·0	154·76	155·31	23·11					516·5	45·5			
	2 5	5·250	E	E	47·9	154·20	154·68	456·09	200·72	201·15	2 15 16·4	1·000370	515·8	45·3	+0·002080	8·5960649	0·4555128
	1 39			W	48·3	154·52	155·04	56·62					515·7	45·2			
	2 15		W	E	47·2	154·05	154·52	457·01					516·5	45·3			
	2 39			W	47·0	154·46	154·97	54·52					516·0	45·5			
	2 0	6·625	E	E	47·9	154·20	154·68	355·96	100·02	100·23	1 7 24·3	1·000342	515·8	45·3	+0·002119	8·2933932	0·4559209
	1 46			W	48·0	154·15	154·63	156·94					516·5	45·3			
	2 20		W	E	47·2	153·86	154·31	356·03					516·9	45·4			
	2 33			W	47·0	153·91	154·36	154·97					516·1	45·4			
	1 55	7·000	E	E	47·9	154·19	154·67	340·67	85·04	85·22	0 57 18·6	1·000342	515·9	45·3	+0·002119	8·2229161	0·4571802
	1 51			W	48·0	153·97	154·43	170·94					515·7	45·3			
	2 24		W	E	47·1	153·95	154·41	340·92					517·1	45·4			
	2 28			W	47·0	153·88	154·33	170·16					516·6	45·4			
									(Diff.)								
	1 18	Magnet away				155·00	155·57	256·77	101·20								
	2 53					154·40	154·90	256·16	101·26								

	N. Pole of Magnet moving E.					N. Pole of Magnet moving W.					Bifilar Magnetometer.			
Date.	No. of Vibration.	Time of Transit.	No. of Vibration.	Time of Transit.	Time of one Vibration.	No. of Vibration.	Time of Transit.	No. of Vibration.	Time of Transit.	Time of one Vibration.	Time of Observation.	Reading Corrected.	Thermometer.	Mean Reading Minus 500 Sc. Div., in parts of force.
		h. m. s.		h. m. s.	s.		m. s.		m. s.	s.	h. m.	Sc. Div.	°	
	0	3 15 17·4	50	3 28 14·3	15·538	0	15 31·7	50	28 28·1	15·528	3 38	509·9	69·6	+0·001386
	10	17 53·0	60	30 49·6	532	10	18 7·1	60	31 3·3	524	48	513·2		
	20	20 28·3	70	33 24·8	530	20	20 42·4	70	33 38·35	519				
	30	23 3·7	80	36 0·0	526	30	23 17·7	80	36 13·4	514				
Aug. 12	40	25 39·0	90	38 35·0	520	40	25 52·9	90	38 48·7	516				
	50	28 14·3	100	41 10·2	518	50	28 28·1	100	41 23·4	506				
	60	30 49·6	110	43 45·2	512	60	31 3·3	110	43 58·5	504				
	70	33 24·8	120	46 20·3	510	70	33 38·35	120	46 33·4	501				
	80	36 0·0	130	48 55·2	504	80	36 13·4	130	49 8·5	502				
	Mean observed time of one vibration = 15s·5169. Mean semi-arc of vibration, 6¾° ? Temperature of magnet, 69°·6 ?													
	0	6 48 27·0	100	7 14 15·2	15·482	0	48 40·6	100	14 27·7	15·471	6 49	509·8	61·9	
	10	51 2·0	110	16 50·0	480	10	51 15·5	110	17 2·1	466	7 16	511·6	61·7	+0·001338
	20	53 36·9	120	19 24·7	478	20	53 50·2	120	19 37·0	468	7 39	511·8	61·4	
	30	56 11·7	130	21 59·3	476	30	56 25·0	130	22 11·3	463				
	40	58 46·7	140	24 34·0	473	40	58 59·8	140	24 46·3	465				
Aug. 21	50	7 1 21·3	150	27 8·7	474	50	1 34·4	150	27 20·2	458				
	60	3 56·1	160	29 43·3	472	60	4 9·1	160	29 55·0	459				
	70	6 31·0	170	32 18·1	471	70	6 43·9	170	32 29·5	456				
	0	9 5·7	180	34 52·9	472	80	9 18·4	180	35 4·0	456				
	90	11 40·5	190	37 27·4	469	90	11 53·0	190	37 38·5	455				
	Mean observed time of one vibration = 15s·4682. Semi-arc of vibration, commencing 9°, ending 3°. Temperature of magnet, 61°·1.													
	0	5 35 34·0	100	6 1 21·7	15·477	0	35 50·7	100	1 39·0	15·483	5 37	508·9	43·1	
	10	38 9·2	110	3 56·0	468	10	38 25·7	110	4 13·7	480	5 43	509·1		
	20	40 44·1	120	6 30·5	464	20	41 0·9	120	6 48·2	473	5 53	510·9	43·0	+0·001313
	30	43 19·0	130	9 5·0	460	30	43 35·8	130	9 22·8	470	6 3	512·0		
Nov. 8	40	45 53·8	140	11 39·5	457	40	46 10·7	140	11 57·4	467	6 26	513·6	42·9	
	50	48 28·6	150	14 13·8	452	50	48 45·6	150	14 31·9	463				
	60	51 3·4	160	16 48·1	447	60	51 20·4	160	17 6·3	459				
	70	53 37·9	170	19 22·5	446	70	53 55·0	170	19 40·9	459				
	80	56 12·7	180	21 56·8	441	80	56 29·8	180	22 15·3	455				
	90	58 47·1	190	24 31·2	441	90	59 4·5	190	24 49·8	453				
	Mean observed time of one vibration = 15s·4607. Semi-arc of vibration, commencing 14°, ending 4°. Temperature of magnet, 43°·3.													
	0	1 39 35·7	50	1 52 34·0	15·566	0	39 49·7	50	52 46·8	15·542	1 48	508·7	41·25	
	10	42 11·5	60	55 9·7	564	10	42 25·2	60	55 21·9	534	1 54	508·0		
	20	44 47·2	70	57 45·1	558	20	45 0·7	70	57 57·0	526	1 58	505·7		+0·001010
	30	47 22·9	80	2 0 20·8	558	30	47 36·0	80	0 32·2	524	2 2	508·7		
	40	49 58·6	90	2 56·2	552	40	50 11·4	90	3 7·2	516				
Nov. 14	Mean observed time of one vibration = 15s·5440. Semi-arc of vibration, commencing 10°, ending 3½°. Temperature of magnet, 41°·1.													
	0	2 8 6·0	50	2 21 3·6	15·552	0	8 19·3	50	21 15·9	15·532	2 9	506·5	41·25	
	10	10 41·7	60	23 39·0	546	10	10 54·8	60	23 51·2	528	2 14	508·4		
	20	13 17·1	70	26 14·5	548	20	13 30·0	70	26 26·6	532	2 19	507·5		+0·000975
	30	15 52·6	80	28 50·0	548	30	16 5·3	80	29 1·8	530	2 25	508·0		
	40	18 28·1	90	31 25·4	546	40	18 40·6	90	31 37·1	530	2 30	507·1		
	Mean observed time of one vibration = 15s·5392. Semi-arc of vibration, commencing 7½°, ending 4½°. Temperature of magnet, 41°·1.													

OBSERVATIONS FOR THE TIME OF VIBRATION.

Date.	N. POLE OF MAGNET MOVING E.					N. POLE OF MAGNET MOVING W.					BIFILAR MAGNETOMETER.			
	No. of Vibration.	Time of Transit.	No. of Vibration.	Time of Transit.	Time of one Vibration.	No. of Vibration.	Time of Transit.	No. of Vibration.	Time of Transit.	Time of one Vibration.	Time of Observation.	Reading Corrected.	Thermometer.	Mean Reading *Minus* 500 Sc. Div., in parts of force.
		h. m. s.		h. m. s.	s.		m. s.		m. s.	s.	h. m.	Sc. Div.	°	
	0	3 29 44·6	50	3 42 41·7	15·542	0	29 59·3	50	42 56·0	15·534	3 30	515·7	45·5	
Dec. 18	10	32 20·2	60	45 17·0	536	10	32 34·8	60	45 31·2	528	3 36	515·5		+ 0·001976
	20	34 55·6	70	47 52·2	532	20	35 10·1	70	48 6·4	526	3 44	514·8		
	30	37 31·0	80	50 27·5	530	30	37 45·5	80	50 41·5	520	3 49	514·7	45·5	
	40	40 6·3	90	53 2·8	530	40	40 20·8	90	53 16·7	518				

Mean observed time of one vibration = 15s·5296. Semi-arc of vibration, commencing 10°, ending 4°. Temperature of magnet, 46°·3.

The values of *m*, the magnetic moment of the deflecting and vibrating bar, and of X, the absolute horizontal intensity, are as under. For the complete discussion of these results, see *Introduction.*

Aug. 12.	Temperature of the magnet = 69°·6 ? ; m = 9·8075.	Bifilar reading corrected, 500 Sc. div. ; X = 3·3903.
Aug. 21.	.... 61·1 ; m = 9·8322.	.... X = 3·4024.
Nov. 8.	.... 43.3 ; m = 9·8563.	.... X = 3·3958.
Nov. 14.	.... 41·1 ; m = 9·7501.	.... X = 3·3993.
Dec. 18.	.... 46·3 ; m = 9·7675.	.... X = 3·3959.

It should be remarked that the observation of August 12d is imperfect, owing to the arc of vibration and the temperature of the magnet during vibration not having been observed ; the quantities given being merely guessed, and probably not far from the truth.

DAILY METEOROLOGICAL OBSERVATIONS.

MAKERSTOUN OBSERVATORY,

1843.

Göttingen Mean Time of Observation.				Barometer. Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0-10.
Jan.	1	20	0	29·883	31·0	28·4	2·6	37·6 29·8	0·007	1·2	0·0			7·5
		23	0	904	32·0	29·2	2·8			0·5	0·2	NW by N.	NNW.	5·0
Jan.	2	2	0	892	34·8	31·7	3·1			1·2	0·2	NNW.		2·0
		5	0	925	31·4	29·1	2·3			0·1	0·0		N by W.	2·0
		20	0	29·943	26·8	25·8	1·0	34·2 20·8	0·003	0·2	0·0			10·0
		23	0	929	31·7	30·4	1·3			0·0	0·0			10·0
Jan.	3	2	0	845	34·8	33·7	1·1			1·0	0·5	SSW.		10·0
		5	0	802	35·2	34·1	1·1			...	...			10·0
		20	0	29·385	41·0	38·2	2·8	44·9 26·5	0·117	3·0	1·5	W.		10·0
		23	0	476	37·2	34·1	3·1			...	1·5	W by S.		0·8
Jan.	4	2	0	506	39·9	35·8	4·1			3·0	0·5		W by N.	5·0
		5	0	475	36·5	34·2	2·3			1·8	0·8		W.	1·5
		20	0	29·412	35·6	33·1	2·5	41·4 34·0	0·021	3·0	0·2	W.		8·0
		23	0	580	34·0	31·2	2·8			1·2	1·0	NW by N.		0·2
Jan.	5	2	0	659	36·8	32·6	4·2			2·2	0·8	NW.		0·8
		5	0	738	35·8	32·3	3·5			2·0	1·5	NW.	NNW.	1·0
		20	0	29·834	34·7	32·8	1·9	37·0 28·8	0·025	1·2	0·0			10·0
		23	0	787	35·3	34·5	0·8			0·5	0·5	SW by W.		10·0
Jan.	6	2	0	652	40·1	39·2	0·9			1·5	0·8	SW by W.	SW.	10·0
		5	0	578	43·9	43·9	0·0			1·2	0·8	SW by W.	W by N.	9·5
		20	0	29·438	38·7	37·4	1·3	46·3 33·9	0·021	4·0	0·8	SW by S.	WSW.	8·5
		23	0	336	40·4	38·0	2·4			2·5	2·8	SW by W. v.	WSW.	4·0
Jan.	7	2	0	220	41·7	38·8	2·9			4·0	1·2	SSW.	W by S.	6·0
		5	0	174	36·1	35·3	0·8			5·8	0·5	SW by W.		10·0
Jan.	8	0	0	...	...	...	...	41·2 29·6		3·5				
		20	0	29·278	32·8	32·6?	0·2	33·5 22·6	0·650	0·2	0·2	W by S.		10·0
		22	0	29·229	31·3	29·3	2·0			0·5	0·2	SW by W.		10·0
Jan.	9	0	0	29·077	34·7	34·1	0·6			3·5	2·2	SW.		10·0
		2	0	28·960	38·1	36·3	1·8			3·5	1·0	SW.		10·0
		4	0	28·846	37·7	36·8	0·9			3·8	2·2	SW by S.	WSW.	9·5
		6	0	28·688	38·1	37·1	1·0			3·5	1·2	SW by S.		10·0
		8	0	28·576	40·2	38·8	1·4			3·5	1·5	SW by W.	W.	3·0
		10	0	28·559	39·9	37·0	2·9			2·8	2·5	SW by W.		0·2
		20	0	28·234	32·0	32·0	0·0	41·2 32·7	0·092	4·0	3·5	SW by W.		10·0
		22	0	276	37·0	34·1	2·9			5·0	4·8	NW by N. v.	W by N.	10·0
Jan.	10	0	0	415	37·0	33·1	3·9			5·8	4·1		W.	9·8
		2	0	476	34·8	31·0	3·8			6·0	2·8	NW by N. v.		1·5
		4	0	544	34·3	31·8	2·5			3·2	0·5	SW by W.		0·2
		6	0	514	33·2	32·2	1·0			1·5	2·0	W. v.		0·0
		8	0	563	32·9	29·7	3·2			2·8	2·0	W by S.		0·0
		10	0	541	33·0	31·2	1·8			2·0	2·2	W by S. v.		6·0
		20	0	28·647	35·2	32·2	3·0	38·0 30·7	0·000	5·5	0·8	SW by W. v.	WNW?	6·0
		22	0	687	32·6	30·2	2·4			0·5	0·5	W by S.	NW by N.	4·0
Jan.	11	0	5	681	34·7	32·3	2·4			1·0	0·2	W by S.		1·0
		2	0	651	35·4	33·2	2·2			1·0	0·5	W by S.	NW by N.	1·0
		4	0	641	34·7	32·4	2·3			0·5	0·0		W?	5·0
		6	0	628	31·0	30·8	0·2			0·2	0·0			5·0
		8	8	684	30·5	...	...			0·2	0·0			0·0
		10	0	591	29·4	...	...			0·0	0·0			0·0

Jan. 8d 20h. It is doubtful if the wet bulb was moist.

Jan. 9d 1h. By means of the rain gauge it was found that 6 inches of snow was equivalent to 0·65 inch of water.

Jan. 11d 8h. The wet bulb read higher than the dry bulb, although the former was moistened and the water frozen. In future, when the dry bulb reads below 32°, and the wet bulb reading is not given, it is from this cause.

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
20.	Linear cirri radiating from NW. to SE.; loose cumuli on E. horizon.	W
23.	Woolly cirri pointing from SE. +— curl cirri to SW. pointing from NE., cumuli and linear cirri to SE.	W
2.	Linear cirri to W. pointing N. by W.; cum. on the horizon from NE. to SW by S.; some patches of scud to E.	W
5.	Patches of woolly cirri +— loose cumuli nearly as before; linear cirri to W. pointing N. and S.	W
20.	Cirrous clouds ?	W
23.	Id; linear cirri.	W
2.	Semi-fluid-like mass of cirro-stratus.	W
5.	Id.	W
20.	Scud, &c.	W
23.	A bank of cirro-stratus to E., loose cumuli on Cheviot.	W
2.	Scud.	W
5.	Id.	W
20.	Scud, &c., linear cirri.	W
23.	Cumuli to E., bank of cirro-stratus.	W
2.	Cumuli and cirrous clouds to E. and NE., a few cirro-cumuli to S.	W
5.	Loose cumuli and scud.	W
20.	Cirrous clouds; red to E.; clouds breaking.	W
23.	Homogeneous mass of cirro-stratus.	W
2.	Scud +— long cumuli on E. horizon; cirrous clouds above; breaking to S.	W
5.	Id. +— cirrous clouds, linear cirri to W.; misty rain lately.	W
20.	Id. +— id.; a few drops of rain.	W
23.	Id.	W
2.	Id. +— loose cumuli on E. horizon, linear cirri to S.	W
5.	Raining heavily. About 9ʰ snow began to fall, and on the morning of the 8th about 6 inches had fallen.	W
20.	Cirro-stratus.	W
22.	Cirro-cumuli and linear cirri.	W
0.	Cirrous clouds ?	W
2.	Homogeneous cirro-stratus.	W
4.	Scud +— finely reticulated cirri, pointing from NNE. and SW.	W
6.	Scud, &c.	W
8.	Id.	W
10.	A few patches of scud.	W
20.	Snowing heavily—ceased in half-an-hour.	W
22.	Light snow just begun. A little ago cirrous clouds seen above scud, which at 21ʰ moved from W. by N., but now the clouds are quite homogeneous. The greater part of the snow which fell on the 7th and 8th has disappeared this morning.	B
0.	Scud +— cirro-strati above.	W
2.	Cirrous clouds and a few cumuli to E.	B
4.	Haze and a few cumuli on horizon.	W
6.	Patches of cloud to S.	W
8.	Quite clear.	W
10.	Loose scud.	W
20.	Cirrous scud and loose cumuli; clearing off; some snow still on the ground.	B
22.	Scud +— fine linear and mottled cirri.	W
0.	Scud and cirrous clouds.	W
2.	Fine woolly cirri in zenith +— scud on S. horizon.	W
4.	A few patches of scud +— linear, mottled and flame-cirri; linear cirri pointing NNW. and SSE.; cirro-strati.	W
6.	Sky nearly covered with cirrous haze. Lunar halo about 23° radius.	W
8.	Nearly as before. Halo still seen.	W
10.	Some cirrous haze ? Halo more distinct and beautiful than ever.	B

The clouds placed first have their motions given, the motions of those following the mark +— are unknown; when more motions than one are given, the clouds to which they belong are placed in the same order, beginning with the lowest, and are likewise separated by colons.

Göttingen Mean Time of Observation.			BARO-METER. Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lb.	lb.			0–10.
Jan. 11	20	0	28·625	22·1	22·1	0·0	35·7		0·0	0·0			3·0
	22	0	660	22·0	21·9	0·1	20·6		0·0	0·0		W ?	5·0
Jan. 12	0	0	683	27·3	26·4	0·9		0·000	0·0	0·0			3·0
	2	0	693	31·6	29·3	2·3			0·0	0·0			4·0
	4	0	715	31·4	28·9	2·5			0·0	0·0			8·0
	6	0	718	27·3	26·2	1·1			0·0	0·0			1·0
	8	0	720	25·6	24·4	1·2			0·0	0·0			0·0
	10	0	695	24·1	23·5	0·6			0·0	0·0			0·0
	20	0	28·029	33·9	33·8	0·1	31·6		?	3·0	SE.		10·0
	22	0	27·909	34·3	33·3	1·0	20·5		3·5	3·0	SE by S.		10·0
Jan. 13	0	0	27·864	35·6	34·7	0·9		0·200	3·2	0·5	SE.	SSE ?	9·8
	2	5	27·837	37·6	35·3	2·3			0·0	0·0			10·0
	4	0	27·850	35·6	34·7	0·9			0·0	0·0			10·0
	6	0	27·874	34·2	33·7	0·5			0·0	0·0		WNW ?	10·0
	8	0	27·910	34·2	33·5	0·7			0·0	0·0		WNW.	10·0
	10	0	27·955	35·3	34·0	1·3			0·2	0·0		NW ?	10·0
	20	0	28·364	35·5	32·0	3·5	37·9		7·5	6·0	NW by W. v.	W.	10·0
	22	0	403	34·2	32·3	1·9	33·8		4·5	2·5	WNW. v.		3·0
Jan. 14	0	0	454	34·2	31·1	3·1		0·000	3·8	1·5	NW by W. v.	W by N.	7·0
	2	0	477	35·0	32·1	2·9			2·2	0·8	W by S.	W by S.	4·0
	4	0	470	30·8	30·6 ?	0·2 ?			1·2	0·2	W by S.		4·0
	6	0	465	30·3	30·2 ?	0·1 ?			0·5	0·2	W by S.		7·0
	8	0	507	27·3	24·7	2·6			0·5	0·0			2·5
	10	0	28·525	26·6	24·0	2·6			0·5	0·2	WSW.		1·0
Jan. 15	0	0	...	...	...	...	35·8 19·9		0·5				
	18	0	29·097	39·3	35·6	3·7			2·0	1·0	N by W.		10·0
	20	0	216	37·8	36·3	1·5	......		1·5	0·8	N by W.		9·8
	22	0	329	38·8	36·8	2·0	......		1·8	1·0	N by W.	N by E.	7·0
Jan. 16	0	0	429	38·3	36·0	2·3		0·165	1·5	0·5	NW by N.	N by W.	7·0
	2	0	516	39·9	36·8	3·1			1·5	0·8	NNW.		2·0
	4	0	608	38·9	36·1	2·8			1·5	0·5	NW.	N.	2·0
	6	0	688	37·9	35·4	2·5			1·8	0·0		N.	5·0
	8	0	756	35·3	33·7	1·6			0·2	0·2	NW by N.		3·0
	10	0	800	32·3	31·2	1·1			0·2	0·0			0·1
	18	0	29·810	35·0	33·2	1·8			0·5	0·5	SW.		10·0
	20	0	772	36·3	34·9	1·4	39·3		1·0	0·5	SW by S.		10·0
	22	0	750	38·5	37·1	1·4	29·3		2·5	2·0	SW.	SW by W.	10·0
Jan. 17	0	0	739	39·8	38·5	1·3		0·028	3·0	1·8	SW by W.	SW by W.	10·0
	2	0	725	41·3	40·1	1·2			2·5	2·0	WSW ?	WSW : WNW.	9·9
	4	0	752	40·3	39·6	0·7			0·8	0·2	SW by W.	W : NW.	9·0
	6	0	764	43·0	41·8	1·2			0·2	0·0		W by S.	7·0
	8	0	777	42·9	41·3	1·6			2·5	0·2	SW by S ?		6·0
	10	0	812	44·2	42·8	1·4			1·0	1·0	SW by S. v.	W.	9·8
	18	0	29·915	44·3	43·8	0·5			1·5	0·8	SW by W.	WSW ?	10·0
	20	0	922	43·7	42·9	0·8			1·5	0·5	SW by W.	WSW : W ?	8·0
	22	0	938	44·5	42·9	1·6	45·2		2·0	1·8	SW by W.	SW : W.	7·0
Jan. 18	0	0	960	46·3	43·9	2·4	39·8 ?	0·000	1·8	1·5	SW.	WSW.	9·9
	2	0	983	46·2	44·7	1·5			3·0	1·2	SW by S.	W.	9·0

Jan. 11ᵈ 20ʰ 15ᵐ. The difference of the dry and wet bulbs = 0°·4.

Jan. 15ᵈ 18ʰ. The maximum temperature of yesterday was attained this morning, the maximum was therefore lost, and there was no minimum, as the temperature rose during the night; at 15ᵈ 6ʰ the temperature was 27°·4.

Jan. 17ᵈ 18ʰ. The index of the minimum thermometer was at 36°·4, which was probably the temperature at setting yesterday morning; the minimum given is from the dry bulb reading at 17ᵈ 4ʰ, as the temperature was probably not below 43° during the night.

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
20.	Linear cirri pointing NNE. and SSW., cirrous haze.	W
22.	Patches of mottled cirri ← cirri as before, but so thick to S. that the sun's rays project but a faint shadow, a line of small cumulo-stratus to N.	W
0.	Thick cirrous clouds to SE., fine curl, woolly, and linear cirri, the latter pointing N. and S. ?	W
2.	Flame, woolly and reticulated cirri, the latter pointing N. by E. and S. by W., cirrous clouds and cumuli on horizon.	W
4.	Woolly cirri; cirro-strati and cumuli on NE. horizon.	W
6.	A few linear cirri to E. pointing N. and S.	W
8.	Quite clear.	W
10.	Id.	W
20.	Snowing. The wind has been very high during the night, but the vane of the Anemometer has been frozen up; the present force might be estimated at about 5 lbs.	B
22.	Sleet.	W
0.	Scud ← thick cirrous clouds, very hazy to E.; sky in patches to SW.	W
2.	Homogeneous, except a few cumuli to S.	W
4.	Beginning to snow.	W
6.	Scud.	W
8.	Id.	W
10.	Id.; occasional patches of sky.	W
20.	Scud ← cirrous clouds to E.	W
22.	Woolly and contorted cirri; snowing to N. and E. ? surface of the ground freezing.	B
0.	Woolly cirri ← fine linear cirri pointing WNW., cumulo-cirrous clouds.	W
2.	Id. ← id. id.	W
4.	Id.; loose cumuli on NE. horizon, cirrous scud to S.; sky red to N. and NE.	W
6.	Id.; linear cirri to W. lying N. and S., haze to S.	W
8.	Thin woolly cirri.	W
10.	Thin cirrous clouds on horizon; beautifully clear evening.	W
18.	Dark woolly-like clouds.	B
20.	Raining since 18ʰ 30ᵐ scud; sky to NE. and SE.	B
22.	Scud ← cirrous clouds and loose cumuli to S. and on NE. horizon.	W
0.	Thin scud ← woolly-edged cumuli.	W
2.	Loose cumuli on N. horizon, woolly cirri and woolly-edged cumuli to S.	W
4.	Patches of scud ← loose cumuli to N., cumulo-strati to S.	W
6.	Scud, clearing off rapidly.	W
8.	Woolly cirri, a range of cumulo-strati to SE.	W
10.	A small patch of woolly cirrus to SE.	W
18.	Clouds homogeneous.	W
20.	Id.	W
22.	Scud, moving rapidly; light rain.	B
0.	Id.	B
2.	Loose strings of scud, very low and moving rapidly: thick scud, slowly ← cirrous clouds; occasional drops of rain.	B
4.	Thin scud: thick scud ← cirrous clouds; large banks of white clouds to SE.; clouds blue to E.	W
6.	Scud ← cumulo-strati to S.	W
8.	Scud and cirrous clouds.	B
10.	Scud. Wind in gusts.	B
18.	Scud.	B
20.	Cirri chiefly linear. A coloured lunar corona, the innermost colour is a bluish-white of about 2 diameters in breadth, next yellow of ¾ diameter, next a brownish or reddish colour of ¾ diameter, next light-blue 1½ diameter; the corona becomes elliptical, the major axis lying in the direction of the linear cirri which are probably a principal cause of it; red is afterwards seen to the outside of the blue and the inner red becomes yellowish or orange: the appearance of the clouds is very strange, the mass of clouds from the zenith to the SE. is a kind of cirro-cumuli, all which, in a radius of 30° from the SE. is intensely red; the clouds over the whole sky are more or less tinged with red.	B
22.	Scud: cirro-cumuli and woolly cirri ← linear cirri to E. pointing N. by W., masses of loose cumuli on E. horizon, cumulo-strati to N.	W
0.	Cirrous scud, mottled, linear, speckled, and contorted cirri, large woolly cirro-cumuli, the clouds have a strange appearance, the scud seems spreading out into a sort of cirro-cumuli and mottled cirro-strati.	W
2.	Scud ← woolly, mottled, and striated cirri lying E. to W., loose cumuli on E. horizon, cumuli-strati to N.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Jan. 18	4	0	30·002	47·1	45·5	1·6			2·0	0·8	SW.	W by S.	9·0
	6	0	044	46·9	45·3	1·6			1·8	1·0	SW.		10·0
	8	0	089	46·3	45·4	0·9			1·2	0·5	SW.		10·0
	10	0	122	46·2	45·4	0·8			0·5	0·0			10·0
	18	0	30·139	46·2	45·2	1·0			1·8	1·0	WSW.	WSW.	6·0
	20	0	174	45·6	44·2	1·4	46·7		1·8	0·5	WSW.		10·0
	22	0	189	45·8	44·8	1·0	41·4		0·5	0·5	SW by W.		10·0
Jan. 19	0	0	196	46·8	45·7	1·1		0·006	0·5	0·8	SW by W.	WSW ?	10·0
	2	0	176	47·0	45·5	1·5			1·0	0·0			10·0
	4	0	172	46·5	45·2	1·3			1·0	0·0			10·0
	6	0	181	45·3	44·4	0·9			0·5	0·2	SW.		10·0
	8	0	184	44·7	43·7	1·0			0·5	0·0			10·0
	10	0	176	43·5	42·5	1·0			1·0	1·0	SW by S.		9·0
	18	0	30·089	43·0	42·1	0·9			1·2	0·0		WSW.	10·0
	20	0	30·064	40·7	39·9	0·8			0·0	0·0		SW by W ?	8·0
	22	0	30·061	41·8	40·9	0·9	47·3		0·2	0·0		SW.	9·5
Jan. 20	0	0	30·022	44·3	42·6	1·7	42·0		0·2	0·0		S by W.	8·0
	2	0	29·995	43·2	41·6	1·6		0·000	0·2	0·2	SW by S.	S by W.	10·0
	4	0	29·969	41·8	39·7	2·1			0·5	0·0		SSW.	10·0
	6	0	29·951	40·0	38·0	2·0			0·2	0·0		S by W ?	7·0
	8	0	29·930	34·7	33·8	0·9			0·2	0·0			0·0
	10	0	29·909	33·0	32·3	0·7			0·0	0·0			0·0
	18	0	29·791	29·5	28·3	1·2			0·0	0·0			1·0
	20	0	763	28·0	…	…			0·0	0·0			1·0
	22	0	748	27·7	…	…	44·4		0·0	0·0			5·0
Jan. 21	0	8	709	30·2	29·7	0·5	26·8		0·0	0·0			0·0
	2	0	682	33·7	31·8	1·9		0·000	0·0	0·0			0·0
	4	0	662	35·8	33·0	2·8			0·8	0·2	SW by W.	SW.	9·0
	6	0	678	34·8	33·0	1·8			0·2	0·0		SW ?	10·0
	8	0	676	35·2	33·0	2·2			0·2	0·0			10·0
	10	0	674	36·2	34·3	1·9			0·0	0·0			10·0
Jan. 22	0	0	…	…	…	…	43·5 25·4		0·5	…			
	18	0	29·654	37·1	36·8	0·3			1·5	0·0			0·0
	20	0	635	38·0	36·9	1·1			1·2	1·2	S by E.		2·0
	22	0	628	38·9	37·5	1·4	46·1		1·2	0·5	S by E.	SW ? : NW ?	9·0
Jan. 23	0	0	593	42·2	40·3	1·9	36·0		1·2	0·8	S by E.		9·5
	2	0	534	43·7	41·5	2·2		0·000	1·2	…		S by W.	8·0
	4	0	489	44·1	41·6	2·5			1·2	1·0	S by E.	S by W : S.	9·5
	6	0	…	…	…	…			…	…			……
	8	0	409	43·7	42·0	1·7			3·0	0·5	S by E.		10·0
	10	0	362	44·0	42·8	1·2			2·8	1·5	S by E. v.		10·0
	18	0	29·306	46·8	44·9	1·9			3·5	1·2	SSW.		8·0
	20	0	325	46·9	45·3	1·6			2·0	1·5	SW by S.	SW.	9·8
	22	0	348	45·2	43·8	1·4	44·0		1·2	0·8	SW by S. v.	WSW ?	3·0
Jan. 24	0	0	369	46·9	45·3	1·6	42·9		2·0	2·5	SW by S.	WSW ?	4·0
	2	0	364	47·8	45·9	1·9		0·181	2·5	0·8	SW by S.	SW : SW.	8·0
	4	0	371	47·6	45·2	2·4			1·5	0·8	SW by S.	SW by S.	10·0
	6	0	379	46·4	44·0	2·4			1·0	0·8	SW by S.	SW.	9·0
	8	0	400	44·7	42·6	2·1			1·5	1·2	SW by S.		1·5
	10	0	424	44·3	42·1	2·2			1·0	0·8	SW by S.		1·0
	18	0	29·446	44·0	42·0	2·0			2·5	2·2	SW by S.		8·0

Jan. 24d 0h. The dry and wet bulbs, the maximum and minimum, and the standard thermometers, were placed to-day on the new revolving frame. (See *Introduction.*)

SPECIES OF CLOUDS, &c.	Observer's Initial.
h.	
4. Masses of cirro-cumuli and mottled cirro-strati ← varieties of cirri; sky of a deep blue, the clouds have a bluish or greyish tinge.	B
6. Clouds quite homogeneous.	B
8. Dark; light rain.	W
10. Light rain.	W
18. Scud, moving rapidly.	D
20. Id.; light rain.	D
22. Id., cumulo-strati on NE. horizon.	W
0. Id., nearly homogeneous.	B
2. Id.	H
4. Id.	B
6. Id., light rain.	H
8. Clouds homogeneous, dark.	W
10. Cirrous haze, stars seen dimly; the moon rising red.	B
18. Scud, like a thin stratum of a semifluid pouring over the moon's face.	B
20. Scud ← the sky nearly covered with cirrous clouds and haze.	B
22. Id. ← fine woolly and silky cirri.	W
0. Id. ← woolly cirri, loose cumuli on horizon from N. to E.	W
2. Id.	W
4. Id. ← cirrous clouds to S.	W
6. Id. ← id. ; the scud covers all the sky except three-tenths to E.	B
8. Stars seen indistinctly.	W
10. Id.	W
18. Light cirri; lunar halo at 17^h 50^m.	W
20. Id.; haze to E. and N., tinged with red to E.	W
22. Linear and mottled cirri lying in strata from E. to W., becoming thick haze on all sides except to W.; fog, objects invisible at ¾ of a mile to S. and E; hoar frost.	B
0. Hazy as before to E., fog clearing off.	B
2. Hazy round horizon.	B
4. Scud.	W
6. Id.	W
8. Id.	B
10. Id.	B
18. Quite clear.	W
20. Linear cirri lying NW. to SE., loose cumuli on Cheviot.	W
22. Patches of scud on hor.: woolly cirri lying in strata from NW. to SE.	B
0. Nearly as at 22^h, clouds thicker.	B
2. Cirrous-edged cumuli.	B
4. Scud: mottled and woolly cirri moving very slowly.	W
6.	W
8. Raining heavily.	W
10. Id.	W
18. Scud; rain; a flash of lightning seen; clouds moving off.	B
20. Id.; smart showers.	B
22. Id. ← woolly cirri to E., loose cumuli to SW.	W
0. Id. ← woolly and mottled cirri.	W
2. Id., moving quickly: cirrous clouds, slowly ← fine cirro-cumuli to E.	W
4. Id.	B
6. Id.; smart shower commenced.	B
8. Scud to N.	W
10. Scud.	W
18. Scud; cirrous clouds above ?	W

Göttingen Mean Time of Observation.			BARO-METER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Jan. 24	20	0	29·477	44·1	42·5	1·6			2·5	1·0	SW.	WSW.	10·0
	22	0	530	45·0	43·0	2·0	47·2 43·3		1·8	1·5	SW.	W by S.	8·5
Jan. 25	0	0	567	46·9	43·4	3·5		0·006	1·8	2·0	SW.	W by S.	9·5
	2	0	569	47·5	43·5	4·0			3·2	1·8	SW by W. v.	W.	10·0
	4	0	580	46·1	44·0	2·1			2·0	0·8	SW by W ?	WNW.	10·0
	6	0	628	45·8	44·0	1·8			0·8	0·2	SW by W.	W by S ?	8·0
	8	0	620	46·8	45·1	1·7			1·0	0·8	SW by W.		10·0
	10	0	587	47·2	45·8	1·4			2·0	1·5	SW by S.		10·0
	18	0	29·527	46·9	45·3	1·6			2·5	0·5	WSW. v.	WNW.	1·5
	20	0	579	46·0	43·9	2·1			0·8	0·2	SW ?	WNW.	1·0
	22	0	655	46·3	44·3	2·0	47·4 43·2		0·8	0·5	W ?	WNW : WNW.	5·0
Jan. 26	0	0	668	46·9	42·9	4·0		0·060	1·0	0·8	W by S.		10·0
	2	0	669	46·8	41·9	4·9			0·8	0·5	SW by W.	W by N.	5·0
	4	0	673	45·3	41·8	3·5			1·2	1·5	SW by W.	WNW.	10·0
	6	0	680	44·5	41·4	3·1			1·0	1·0	SW by W. v.	WNW.	10·0
	8	0	644	43·2	41·3	1·9			1·8	0·8	SW by W.		10·0
	10	0	589	45·0	42·9	2·1			2·2	1·8	SW.		10·0
	18	0	29·425	50·0	48·7	1·3			6·0	2·2	SSW.		10·0
	20	0	418	50·0	48·2	1·8			2·0	1·2	SW by S.	WSW.	7·0
	22	0	382	49·5	47·7	1·8	47·4 42·9		3·8	2·8	SW.	SW by W : W.	10·0
Jan. 27	0	0	363	49·9	48·1	1·8		0·000	4·8	4·0	SW.	WSW.	10·0
	2	0	319	49·2	48·0	1·2			5·2	4·5	SW.	WSW.	10·0
	4	0	330	51·8	50·3	1·5			4·0	0·8	SW.	W by S.	9·9
	6	0	333	55·2	51·8	3·4			2·2	1·8	SW.	WSW.	9·9
	8	0	293	54·9	51·6	3·3			3·5	2·5	SW.		9·0
	10	0	292	53·9	50·9	3·0			2·5	2·8	SW.		8·0
	18	0	29·154	48·8	43·0	5·8			9·0	7·0	WNW. v.	W.	0·5
	20	0	167	47·3	42·7	4·6			5·0	3·5	Varying.	W. by N.	1·5
	22	0	202	48·1	43·0	5·1	55·1 46·8		5·0	3·0	WSW. v.	W.	10·0
Jan. 28	0	0	227	47·8	43·7	4·1		0·014	3·0	3·5	SW by W. v.	W by S.	10·0
	2	0	185	47·5	45·4	2·1			5·0	3·8	SW by W. v.	W by S.	9·5
	4	0	193	46·5	42·8	3·7			6·2	6·0	WNW. v.	WNW.	3·0
	6	0	293	44·9	40·9	4·0			8·0	2·8	WNW.	WNW.	0·5
	8	0	381	43·2	38·0	5·2			5·0	3·2	NW by W. v.		0·0
	10	0	439	42·9	38·0	4·9			6·0	5·2	NW by W.		0·0
Jan. 29	0	0	...	...	...	...	48·3 41·9		4·8				
	18	0	29·121	47·6	43·1	4·5			5·0	3·0	SW by W.	WNW.	1·0
	20	0	104	46·3	42·0	4·3			4·8	3·5	SW by W. v.	W.	4·0
	22	0	109	44·8	40·2	4·6	54·1 46·4		7·2	8·2	W by N. v.	W. by N.	2·0
Jan. 30	0	0	110	47·8	41·6	6·2		0·270	9·5	8·2	W. v.	W. by N.	6·0
	2	0	176	46·0	41·2	4·8			9·5	6·5	W. v.	WNW.	2·0
	4	0	240	44·3	39·8	4·5			6·2	7·0	W. v.	W. by N.	1·0
	6	0	265	43·8	39·9	3·9			6·8	8·0	NW.	WNW.	0·5
	8	0	317	43·8	39·4	4·4			9·8	6·0	NW.		0·0
	10	0	465	43·7	39·1	4·6			5·5	1·8	W by S.		0·0
	18	0	29·499	42·0	40·4	1·6			2·5	1·2	SW.		4·0
	20	0	469	44·0	41·1	2·9			1·5	0·8	SW by W.	W by S ?	9·9
	22	0	433	45·2	43·0	2·2	47·6 41·3		2·5	0·8	SW by W.	SW by W.	9·9

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
20.	Id.	W
22.	Cirrous scud ← mottled cirri; occasional drops of rain.	B
0.	Scud ← beautifully mottled and striated cirri; cirro-cumuli becoming very thick to S.; the cirro-cumuli which cover the greater part of the sky lie in strata like fine snow-balls, in one place very distinct and separated from smaller ones by a sort of hazy edge, they get larger and more hazy to S.; the striated cirri are also of an uncommon kind, being like thick cirrous clouds lying in fine lines on the top of each other.	B
2.	Patches of scud ← clouds of a thick, fibrous, woven, wavy texture, like a sort of cloth or matting; the line of hollows is from SSE. to WNW., giving a stratified appearance; the fibres lie from WSW. or SW. by W., a few lines crossing from NNW. Pure and linear cirri in thick masses to NE., cirro-cumuli, also in strata; a few strips of sky to NE.; in a few minutes the cirri to N. point from WNW., there is a large bank of white cloud to W., below which the scud appears to come.	B
4.	Flocculent and striated thick muddled cirri and cirro-stratus, moving slowly.	W
6.	Scud ← cirrous clouds.	W
8.		B
10.	Dark.	B
18.	Masses of scud.	B
20.	Id., chiefly to E. ← a few linear cirri to S.	B
22.	Patches of scud: woolly cirri ← linear cirri to NE. pointing NNW.; loose cumuli and masses of scud to S.	W
0.	Thin woolly cirri covering nearly all the sky, linear cirri to S. lying E. and W.	W
2.	Woolly cirri and cirro-cumuli ← linear cirri to E. pointing NNW.; a sort of cirrous haze covers most of the sky.	W
4.	Patches of scud ← thick cirrous haze or cirro-stratus at 3^h a bright spot was seen where the sun was, now it is quite thick and the sun invisible.	B
6.	As before.	B
8.	Id.	W
10.	Id.	W
18.	Dark, scud.	W
20.	Scud ← woolly cirri and cirro-cumuli.	W
22.	Scud, moving very rapidly and very low: cirrous clouds, moving slowly, very thick to E. ← loose-edged cirro-cumuli to NW.; occasional patches of sky.	B
0.	Thick scud.	B
2.	Id.; light Scotch mist.	B
4.	Scud ← cirrous clouds seen above.	W
6.	Id. ← cumulous scud and cirrous haze to W.; very black to SE.	W
8.	Id.; cirrous haze?	B
10.	Id.; stars very dim.	B
18.	Patches of scud.	B
20.	Id.; hazy to S.; wind varying from NW. to SW.	B
22.	Scud ← cirrous clouds.	W
0.	Id. ← id.; a few drops of rain.	W
2.	Id. ← woolly cirri.	W
4.	Scud and cumuli ← cirrous clouds to NW.; portions of rainbows seen since last observation.	B
6.	Scud.	B
8.	Clear; something like an auroral light to N., but no corruscations; a hazy cloud?	W
10.	Id.	W
18.	Thin clouds shooting up from about WNW.	B
20.	Thick masses of cirrous-edged scud; hazy to E.; stormy like.	B
22.	Patches of scud ← haze and loose cumuli on horizon from S. to E.; faint linear cirri to W., pointing N. by W.; occasional showers.	W
0.	Scud; occasional showers and rainbows.	W
2.	Loose cumuli; passing showers.	B
4.	Id. id., rainbows.	B
6.	Small patches of scud; cirro-strati on SW. horizon.	W
8.	Clear; haze to S.	W
10.	Clear.	W
18.	Scud?	W
20.	Scud ← cirri and cirro-strati; clouds red to E.	W
22.	Patches of scud ← a thick mass of cirrous clouds moving very slowly; clouds blue-black to SE.	B

Göttingen Mean Time of Observation.				BARO-METER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Jan.	31	0	0	29·366	47·8	45·3	2·5		0·020	3·8	2.5	SW by W.		10·0
		2	0	279	49·0	47·3	1·7			2·8	2·0	SW by S.	SW.	9·8
		4	0	225	50·2	47·7	2·5			4·2	2·5	SW.	SW.	10·0
		6	0	106	49·3	47·7	1·6			5·0	5·0	SW.	SW.	10·0
		8	0	102	50·8	48·2	2·6			7·2	4·0	SW.	SW ?	3·0
		10	0	172	46·8	42·8	4·0			4·8	1·8	SW by S.		2·0
		18	0	29·325	38·0	36·2	1·8			5·0	1·2	SW by S.		0·0
		20	0	320	40·6	38·2	2·4	51·8 37·5		2·0	1·5	SW.	SW.	1·5
		22	0	381	40·3	37·7	2·6			3·0	1·5	SW.	W ?: WSW.	3·0
Feb.	1	0	0	380	42·5	39·1	3·4		0·092	3·0	2·8	SW.	WSW.	1·5
		2	0	315	44·9	40·2	4·7			4·2	3·2	SW.	SW by S.	3·5
		4	0	231	45·0	40·8	4·2			5·2	4·2	SW by S. v.	SW.	9·5
		6	0	171	42·0	41·3	0·7			6·8	4·0	SW by W.		10·0
		8	0	164	40·0	38·8	1·2			4·5	1·8	SW.		9·0
		10	0	143	42·4	39·8	2·6			5·2	2·5	SW.		4·0
		18	0	29·026	39·9	36·7	3·2			6·2	3·0	SW.		4·0
		20	0	026	38·1	34·8	3·3	44·8 38·5		4·5	1·8	SW.	SW by W.	6·0
		22	0	061	36·8	33·1	3·7			4·0	1·2	SW. v.	W by S.	6·0
Feb.	2	0	0	115	37·4	33·3	4·1		0·345	4·5	4·8	W by N. v.		9·0
		2	0	149	33·7	32·2	1·5			3·8	4·0	SW by W.		8·0
		4	0	147	35·7	32·3	3·4			2·5	1·2	SW.	W by S : W.	8·5
		6	0	138	33·6	31·9	1·7			2·8	1·5	SW by W.	W by S.	7·0
		8	0	106	35·4	32·8	2·6			2·5	2·5	SW.	W.	1·0
		10	0	088	33·2	33·2	0·0			3·5	2·0	SW.		10·0 !
		18	0	28·881	32·9	32·2	0·7			5·2	1·2	SW.		1·0
		20	0	28·810	34·0	33·5	0·5	39·6 30·2		2·5	1·0	SW by W. v.	W.	10·0
		22	0	28·805	32·0	31·3	0·7			3·0	0·5	SW by W.	W ?	3·0
Feb.	3	0	0	28·785	33·6	30·7	2·9		0·387	1·2	0·7	WNW. v.	W.	2·0
		2	0	28·770	32·7	30·4	2·3			2·5	1·5	NW by W.	NW.	3·0
		4	0	28·834	30·9	29·9 ?	1·0 ?			3·0	2·8	N by W.	NW.	7·0
		6	0	28·952	26·7	26·1	0·6			5·5	3·2	N.		10·0
		8	0	29·022	23·0	22·2	0·8			4·2	1·2	N by W.		0·0
		10	0	29·068	23·5	22·9	0·6			4·0	4·8	NNW. v.		10·0
		18	0	29·162	34·6	32·9	1·7			8·0	6·8	NW by N.		10·0
		20	0	232	36·4	33·8	2·6	34·5 21·3		9·2	8·0	N by W.	N.	9·8
		22	0	420	37·4	34·0	3·4			12·8	4·5	N by W.	N by E.	9·0
Feb.	4	0	0	532	37·7	34·3	3·4		0·166	5·2	5·0	N by W.	N by E.	7·0
		2	0	573	36·5	34·0	2·5			5·5	7·0	N by W.		3·5
		4	0	619	36·0	32·4	3·6			5·5	6·0	N by W.	N.	7·0
		6	0	682	33·6	30·9	2·7			7·0	2·0	NNW.	N by E.	7·0
		8	0	718	33·8	31·6	2·2			2·2	1·2	NNW.	N. by E.	6·0
		10	0	728	32·0	31·0	1·0			1·5	0·2	NW by N ?		3·0
Feb.	5	0	0	...	...	...	...	38·6 30·5		1·8				
		18	0	29·827	30·7	29·1	1·6			1·5	1·0	NNW.		0·5
		20	0	844	29·7	28·1	1·6	33·7 29·1		1·2	0·8	NNW.		2·0
		22	0	862	29·8	28·0	1·8			0·8	0·5	NNW.	NNE.	8·0
Feb.	6	0	0	867	34·3	32·8	1·5		0·000	1·5	1·2	NNW.	NNE.	9·8
		2	0	842	36·1	32·8	3·3			1·5	1·2	N by W.	NNE.	9·5
		4	0	860	35·9	33·1	2·8			2·0	1·0	N.	NNE.	9·9
		6	0	860	36·5	34·5	2·0			2·5	1·2	N by W.	N by E.	10·0
		8	0	882	35·3	34·9	0·4			2·0	0·8	N by E.	NNE.	9·8
		10	0	890	36·3	35·0	1·3			0·2	0·2	NNE.	NNE.	0·5

Quantity of Clouds.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0–10.	h.	
10·0	0. Scud creeping along horizon, cirro-cumuli, cirrous haze, bluish-black cirro-stratus to E.; rain apparently falling to S. and W., very stormy like.	B
9·8	2. Scud ← very fine mottled cirri; sky to E.	B
10·0	4. Id.; some of the clouds have a blue tint.	W
10·0	6. Id. very thick.	W
3·0	8. Id.	B
2·0	10. Long strips of clouds pointing from SW. to NE. extending through 120°; a flash of lightning.	B
0·0	18. Clear.	B
1·5	20. A great mass of cumuli or nimbi on horizon to S. and SE.; a few drops of rain; a flash of lightning about [19h.	B
3·0	22. Patches of scud to N.: mottled cirri, striated at the edges, the striæ pointing NNW ← cirrous haze and cumuli on S. horizon.	W
1·5	0. Patches of scud ← loose cumuli on S. horizon; a number of sea gulls seen flying from eastward.	W
3·5	2. Scud ← woolly cirri.	W
9·5	4. Id.; sky on E. horizon.	B
10·0	6. Heavy rain.	B
9·0	8. Scud; like haze in some places.	W
4·0	10. Loose scud, light rain.	W
4·0	18. Scud.	W
6·0	20. Id. ← woolly and linear cirri, cirro-cumuli.	W
6·0	22. Cirrous scud ← a large mass of cirro-stratus on E. and S. horizon; a slight fall of snow.	B
9·0	0. A smart shower of snow.	B
8·0	2. Id., scud.	B
8·5	4. Scud: woolly cirri ← cumuli and nimbi falling in snow to S. and E.	W
7·0	6. Id. ← cumuli round horizon.	W
1·0	8. Id.	B
10·0?	10. Snowing; lightning seen before and after this.	B
1·0	18. Clouds to NW. and SE.	B
10·0	20. Scud.	B
3·0	22. Cirrous scud ← woolly cirri, large masses of cumulo-strati on NE. horizon.	W
2·0	0. Woolly cirri ← cumulo-strati on NE. horizon.	W
3·0	2. Id. ← id., loose cumuli to S.	W
7·0	4. Woolly cirro-strati, falling in snow on all sides but the S.; quite overcast, with snow in a few minutes.	B
10·0	6. Cumuli to NW.	B
0·0	8. Clear.	W
10·0	10. Overcast.	W
10·0	18. Homogeneous, a slight fall of snow.	W
9·8	20. Scud; a few drops of rain.	W
9·0	22. Loose vapoury clouds falling in powdery hail; beautiful cumuli to SE.	B
7·0	0. Cirrous scud ← loose cumuli to S.	B
3·5	2. As before.	B
7·0	4. Cirrous scud.	W
7·0	6. Id.	W
6·0	8. Id.	B
3·0	10. Id.	B
0·5	18. A bank of clouds to E.	W
2·0	20. Woolly cirri and cirrous scud to E.	W
8·0	22. Large woolly cirro-cumuli ← linear cirri to SW.	B
9·8	0. Id.	B
9·5	2. Id.	B
9·9	4. Cirrous scud ← a homogeneous mass to S.; a slight shower of snow.	W
0·0	6. Id. ← cirrous clouds.	W
9·8	8. Scud; light rain; coloured lunar corona.	B
0·5	10. Loose cumuli.	B

Göttingen Mean Time of Observation.				BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Feb.	6	19	0	29·990	39·3	38·1	1·2			2·0	0·8	NE by N.		9·8
		20	0	30·020	39·8	38·8	1·0			1·0	0·2	NE by N.	NE : ENE.	9·5
		22	0	30·042	40·2	39·3	0·9	37·0 34·8 ?		0·5	0·5	NNE.	ENE.	10·0
Feb.	7	0	0	30·058	41·1	39·2	1·9		0·016	0·8	0·5	NE by N.	NE by E.	10·0
		2	0	30·063	41·2	39·9	1·3			0·5	0·2	N by E.	NE.	10·0
		4	0	30·044	40·8	40·2	0·6			0·5	0·2	NNE.		10·0
		6	0	30·058	40·3	40·0	0·3			0·8	0·5	NE by N.		10·0
		8	0	30·052	39·7	39·3	0·4			1·5	1·0	NNE.		10·0
		10	0	30·051	40·5	39·3	1·2			1·5	0·5	NNE.		10·0
		18	0	29·988	40·1	39·7	0·4			2·2	0·0			10·0
		20	0	30·000	40·0	39·7	0·3			0·5	0·2	NE by N.	ENE.	10·0
		22	0	30·011	40·2	40·0	0·2	41·6 39·2		0·2	0·0		ENE.	10·0
Feb.	8	0	0	30·023	41·0	40·5	0·5		0·041	0·2	0·0		ENE.	10·0
		2	0	29·996	41·2	40·8	0·4			0·0	0·0		ENE.	10·0
		4	0	29·978	41·3	40·9	0·4			0·0	0·0		ENE.	10·0
		6	0	29·979	41·0	41·0	0·0			0·0	0·0		ENE.	10·0
		8	0	29·980	40·2	40·2	0·0			0·0	0·0		ENE.	10·0
		10	0	29·983	39·8	39·8	0·0			0·0	0·0			10·0
		18	0	29·953	38·8	38·0	0·8			0·2	0·2	N by E.		10·0
		20	0	29·963	39·1	37·8	1·3			0·5	0·2	N by E.	NE ?	10·0
		22	0	29·996	36·7	36·0	0·7	42·1 38·5		2·2	2·2	N by E.	NE by N.	10·0
Feb.	9	0	0	30·002	38·0	34·8	3·2		0·043	3·2	3·0	N by E.	NNE.	9·5
		2	0	29·998	36·7	33·5	3·2			3·5	1·5	N.	NNE.	10·0
		4	0	29·993	35·4	32·4	3·0			3·0	2·2	N by E.	NNE.	9·9
		6	0	29·992	34·8	31·5	3·3			3·5	2·0	N.	NNE.	9·8
		8	0	29·998	33·1	31·8	1·3			3·0	2·0	N by E.	NNE.	7·0
		10	0	30·005	34·2	31·9	2·3			2·8	...	N by E.	N by E.	9·9
		18	12	29·967	33·2	32·5	0·7			3·2	0·2	NNE.		8·0
		20	0	980	33·9	31·7	2·2			1·2	0·5	NNE.	NNE.	8·0
		22	0	980	34·9	32·8	2·1	36·4 31·5		2·5	0·8	NNE.	NE.	2·5
Feb.	10	0	0	986	37·1	33·2	3·9		0·095	1·5	1·2	NNE.	NNE ?	3·3
		2	0	956	38·3	34·8	3·5			2·8	0·8	NNE.	NNE.	9·2
		4	0	958	37·6	34·5	3·1			2·0	1·0	NE by N.	NE by N.	9·9
		6	0	963	37·1	34·1	3·0			1·2	1·0	NE by N.		10·0
		8	0	983	36·7	34·0	2·7			1·2	1·0	NE by N.	NE.	9·5
		10	0	995	37·1	33·7	3·4			1·0	0·8	NE by N.	NE.	10·0
		18	0	29·986	37·0	33·3	3·7			1·2	0·8	NE.		10·0
		20	0	29·998	36·8	33·1	3·7			1·0	0·2	NE.		10·0
		22	0	29·994	37·3	33·0	4·3	38·0 32·4		0·5	0·5	NE.	NNE.	10·0
Feb.	11	0	0	30·019	38·0	34·0	4·0		0·006	0·8	0·2	NE.	NE by N.	10·0
		2	0	29·999	39·0	34·9	4·1			0·8	0·8	NE.	NE by N.	10·0
		4	0	29·995	38·8	35·0	3·8			1·2	1·0	NE.		10·0
		6	3	30·001	37·1	34·9	2·2			0·5	0·2	NE.		10·0
		8	0	30·030	36·3	35·0	1·3			0·5	0·0		NE by N.	10·0
		10	0	30·038	36·3	35·0	1·3			0·2	0·0			10·0
Feb.	12	0	0	...	...	...	...	38·6 ? 35·3		0·8				
		18	0	29·888	28·8	28·3	0·5			0·8	0·0		SSW ?	3·0
		20	0	870	30·9	29·7	1·2			0·0	0·0		SW.	9·9
		22	0	854	32·1	30·5	1·6	40·0 28·9		0·0	0·0		W.	9·9
Feb.	13	0	0	822	34·9	32·2	2·7		0·021	0·0	0·0		W.	10·0
		2	0	766	36·0	33·0	3·0			0·2	0·2	WNW.	W.	9·8
		4	0	736	36·8	33·0	3·8			0·8	0·5	WNW.	WNW.	3·5

Feb. 6^d 22^h. Probably no minimum temperature during the night. The reading given is taken from the observations of yesterday afternoon.

Feb. 8^d 6^h—10^h. No difference between the dry and wet bulbs owing to the mist which has been falling.

Feb. 12^d 0^h. The maximum temperature is taken from the readings of the dry thermometer yesterday.

Feb. 12^d 18^h. Although the temperature is considerably below freezing, the snow water in the cistern of the wet bulb has not been frozen this morning.

Species of Clouds, &c.	Observer's Initial.
h. 19.	B
20. Two currents of scud.	B
22. Scud ← cirrous scud to S.; very thick to E.	W
0. Cirrous scud.	W
2. Scud.	W
4. Light rain, Scotch mist.	B
6. Id. id.	B
8. Id., scud.	W
10. Scud.	W
18. Homogeneous.	W
20. Scud; light rain.	W
22. Id. id.	B
0. Id. id.	B
2. Id. id.	B
4. Id. id.	W
6. Id. id.	W
8. Id. id.	B
10. Clouds breaking a little, mist gone.	B
18. Very thick and dark.	B
20. Patches of scud, haze.	B
22. Scud; raining.	W
0. Scud ← woolly cirri and cirro-cumuli.	W
2. Id.	W
4. Id., moving from different directions between N. and E.	B
6. Heavy black scud.	B
8. Thin scud, snowing a little.	W
10. Scud.	W
18. Loose scud, about 1½ inch of snow has fallen during the night.	W
20. Id.; some snow falling.	W
22. Cirrous scud and woolly cirri ← a few cumuli to S.; snowing to N.	B
0. Cirrous scud and woolly cumuli ← cumuli to NW.	B
2. Loose cumuli and scud.	B
4. Cirrous scud.	W
6. A shower of fine hail.	W
8. Cirrous scud.	B
10. Id.	B
18.	B
20. Scud.	B
22. Cirrous scud.	W
0. Scud.	W
2. Id.	W
4. Id.	B
6. Id.	W
8. Id.	W
10. Id., light rain.	W
18. Large cirro-cumuli ← linear cirri and haze to E.	B
20. Scud.	B
22. Cirrous scud moving slowly.	W
0. Scud, motion scarcely perceptible.	W
2. Id.	W
4. Loose scud.	B

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			1–10.
Feb. 13	6	0	29·677	34·0	32·0	2·0			0·5	0·2			1·0
	8	0	662	32·3	31·2	1·1			0·2	0·0			0·2
	10	0	636	34·2	32·4	1·8			0·2	0·0			2·0
	18	20	29·601	28·7	27·5	1·2			1·2	0·8	N by E.	N ?	9·8
	20	0	599	27·0	25·4	1·6			2·0	0·5	N.	NNW.	3·5
	22	0	587	27·2	24·5	2·7	36·9 25·6		0·2	0·2	N by W.	NNW.	5·0
Feb. 14	0	0	572	26·9	24·2	2·7			2·2	1·5	N by W.	N by W : WNW.	2·5
	2	0	542	27·0	24·8	2·2		0·000	3·0	1·8	NNW. v.		4·0
	4	0	515	25·0	23·6	1·4			2·5	1·8	N by W.		2·0
	6	0	503	24·0	21·9	2·1			1·5	0·5	NNW.		1.0
	8	0	493	24·1	22·9	1·2			0·8	0·5	NNW.		0·5
	10	0	477	23·1	22·0	1·1			0·8	0·2	NNW.		0·1
	18	0	29·357	19·6	19·0	0·6			0·5	0·0			0·2
	20	0	334	19·3	18·0	1·3			0·0	0·0			0·5
	22	0	320	22·7	20·6	2·1	28·2 18·5		0·0	0·0			0·2
Feb. 15	0	0	268	26·3	23·3	3·0			0·2	0·0			0·2
	2	0	219	28·6	25·4	3·2		0·000	0·0	0·0		N by W.	2·5
	4	0	163	28·9	26·0	2·9			0·0	0·0			7·0
	6	0	121	28·1	26·0	2·1			0·0	0·0		W by N.	10·0
	8	0	099	27·3	26·3	1·0			0·0	0·0			9·8
	10	0	096	26·6	25·3	1·3			0·0	0·0			10·0
	18	0	29·047	22·0	21·5	0·5			0·0	0·0			9·5
	20	0	058	22·4	...	...			0·0	0·0		N by W.	5·0
	22	0	082	22·0	20·2	1·8	28·2 19·6		0·0	0·0			0·3
Feb. 16	0	0	091	31·2	28·7	2·5			0·0	0·0		N by E.	6·0
	2	0	086	31·8	28·8	3·0		0·000	0·2	0·2	N by W.	N by E.	3·0
	4	0	100	31·8	29·9	1·9			0·2	0·0		N.	3·5
	6	0	130	28·9	27·0	1·9			0·2	0·0			2·0
	8	0	165	23·3	22·0	1·3			0·0	0·0			0·2
	10	0	194	24·4	23·4	1·0			0·0	0·0			7·5
	18	0	29·316	25·8	24·2	1·6			0·5	0·5	N by W.	N by E.	7·0
	20	0	360	27·0	25·8	1·2			1·0	0·8	N by W.		10·0
	22	0	407	28·0	26·9	1·1	33·8 19·7		0·2	0·0		NNE.	7·0
Feb. 17	0	0	440	31·2	30·2	1·0			0·2	0·0			10·0
	2	0	453	33·8	32·2	1·6		0·054	0·0	0·0		NNE.	8·0
	4	0	468	32·2	31·2	1·0			0·2	0·0		NNE.	7·5
	6	0	499	23·9	...	...			0·2	0·0		NNE.	2·5
	8	0	520	20·3	20·0	0·3			0·0	0·0			0·5
	10	0	531	18·8	18·0	0·8			0·0	0·0			0·0
	18	0	29·552	8·2	7·0	1·2			0·0	0·0			0·5
	20	0	568	7·3	7·3	0·0			0·0	0·0			3·0
	22	0	573	13·8	11·8	2·0	33·6 6·9		0·0	0·0		NE.	0·5
Feb. 18	0	0	580	24·6	24·0	0·6			0·0	0·0		NE.	8·5
	2	0	566	32·4	30·0	2·4		0·001	0·0	0·0			8·5
	4	0	534	31·7	30·2	1·5			0·0	0·0		NE.	9·0
	6	0	534	24·4	...	...			0·5	0·0			3·5
	8	0	537	24·0	21·3	2·7			0·0	0·0			0·5
	10	0	534	24·4	23·7	0·7			0·0	0·0			1·0
Feb. 19	0	0	...	...	...	...	36·4 18·2		0·5				
	18	0	29·321	35·7	32·0	3·7			1·5	1·0	NE by E.		10·0
	20	0	318	36·1	32·8	3·3			1·2	1·0	NE by E.		10·0
	22	0	320	36·7	33·3	3·4	37·8 30·5		2·5	1·8	ENE.		10·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
6.	Flocculent cirri to W., red ; haze to E., reddish.	B
8.	A few patches of cirrous clouds to E.	W
10.	Linear cirri pointing from WNW. to ENE. A lunar corona about 1¼° radius.	W
18.	Scud.	W
20.	Cirrous scud.	W
22.	Loose cumuli ; a few flakes of snow a little ago.	B
0.	Loose-edged cumuli : fine woolly and linear cirri.	B
2.	Id., with cumulo-strati ; cirro-strati to SW. ; snow falling from some of the cumuli to E.	B
4.	Scud and loose cumuli on horizon.	W
6.	Id., from NW. to NE., cirro-strati to SE.	W
8.	Loose cumuli on E. horizon.	B
10.	A patch of cirro-stratus to SE.	B
18.	Cirro-stratus on SE. horizon.	B
20.	Cirro-strati and cumulo-strati on E. and SE. horizon.	B
22.	Ranges of cumuli on horizon from N. to E.	W
0.	Id.	W
2.	Thin woolly cirri to NW., like haze near the horizon +— cumulo-strati on NE. horizon.	W
4.	Woolly and tangled cirri, apparently dropping to E. and S. ; cumuli on horizon.	B
6.	Cirrous scud, a few flakes of snow.	B
8.	Id., cumulo-strati on horizon to E.	W
10.	Id.	W
18.	Scud. [them tinged with red.	W
20.	Cirrous scud +— large and beautiful masses of cumuli and cumulo-strati on horizon from N. to E., some of	W
22.	Range of cumuli on E. horizon.	B
0.	Cirrous scud +— cumuli on E. and N. horizon ; snowing to E.	B
2.	Loose-edged cumuli and cumulo-strati.	B
4.	Masses of cirrous scud +— cirrous-edged loose cumuli to E., cumuli to S.	W
6.	Large masses of cumuli and cumulo-strati to S., and on horizon from N. to E.	W
8.	A few patches of clouds on N. horizon.	B
10.	Loose cumuli.	B
18.	Cirrous scud +— cumuli to NE. ; a few flakes of snow during the night.	B
20.	Scud, light fall of snow.	B
22.	Id. +— loose cumuli to NE. ; light shower of snow 10^{m} ago.	W
0.	Id. ; a shower of snow.	W
2.	Cirrous scud +— cumuli on horizon from N to E. ; snowing since last observation till within 15^{m}.	W
4.	Cirrous scud +— beautiful ranges of cumuli on N. and E. horizon.	B
6.	Scud +— beautiful cumulo-strati to SE., some with cirrous crowns ; splendid pyramidal cumuli on N. hori-	B
8.	Patches of scud ; a few flakes of snow. [zon ; sky hazy, red to E. and NE.	W
10.	Clear.	W
18.	Some patches of scud. [masses of scud.	W
20.	Cumuli and cumulo-strati on horizon from NW. to E. and to S., linear cirri to S. pointing towards ENE.,	W
22.	A few patches of scud +— cumuli on N. horizon.	B
0.	Large masses of cirrous-edged cumuli +— piles of cumuli to N.	B
2.	As before ; snowing to N. ?	B
4.	Scud +— woolly cirri to S., cumuli on S. horizon ; beginning to snow.	W
6.	Masses of scud, woolly cirri, loose cumuli round the horizon.	W
8.	Patches of clouds to N.	B
10.	Snowing lately.	B
18.	Homogeneous.	W
20.	Id., a few flakes of snow.	W
22.	A sort of hail-snow falling.	B

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Feb. 20	0	0	29·335	36·8	33·8	3·0		0·062	2·5	2·0	ENE.		10·0
	2	0	321	36·8	33·4	3·4			2·2	2·2	ENE.		10·0
	4	0	319	36·0	33·0	3·0			2·5	1·8	ENE.		10·0
	6	0	327	35·8	32·6	3·2			3·8	1·8	ENE. v.		10·0
	8	0	338	36·3	32·8	3·5			2·5	0·5	ENE ?		10·0
	10	0	342	34·3	33·2	1·1			2·2	1·5	E by N.		10·0
	18	0	29·288	34·9	34·7	0·2			2·5	1·2	ENE.		10·0
	20	0	310	35·0	34·6	0·4	36·8		1·0	0·5	NE by E.	ENE.	10·0
	22	0	313	35·2	35·0	0·2	31·4		1·5	1·5	ENE.	ENE.	10·0
Feb. 21	0	0	341	36·3	35·8	0·5		0·151	1·5	0·2	ENE ?		10·0
	2	0	328	36·0	35·7	0·3			0·5	0·2	NE by E ?		10·0
	4	0	320	36·4	36·0	0·4			0·5	0·5	NE by N.		10·0
	6	0	326	36·9	36·2	0·7			0·8	0·8	E by N.	E by S.	10·0
	8	0	348	37·2	36·6	0·6			0·8	0·2			10·0
	10	0	351	37·2	36·4	0·8			0·2	0·2	NE ?		10·0
	18	0	29·316	36·0	35·8	0·2			0·5	0·2	NE by N.		10·0
	20	0	316	36·4	35·4	1·0	37·3		0·5	0·2	NE by N.		10·0
	22	0	313	36·8	36·2	0·6	34·0		0·5	0·2			10·0
Feb. 22	0	0	312	37·8	37·1	0·7		0·053	0·8	0·5	NE by N.		10·0
	2	0	286	38·1	37·7	0·4			0·8	0·5	NE by E ?		10·0
	4	0	282	37·9	37·4	0·5			0·8	0·5	NE by E ?		10·0
	6	0	288	37·5	37·2	0·3			0·5	0·2	NE by E.		10·0
	8	0	303	37·4	37·1	0·3			0·8	0·5	NE.		10·0
	10	0	319	37·2	36·9	0·3			0·5	0·5	NE by E.		10·0
	18	0	29·339	36·1	35·5	0·6			1·0	1·0	NE by N.		10·0
	20	0	367	36·0	35·4	0·6	38·1		1·0	0·5	NE by N.	ENE.	10·0
	22	0	379	37·0	36·3	0·7	35·0		0·8	0·8	NE.		10·0
Feb. 23	0	0	391	37·9	37·1	0·8		0·194	1·0	0·8	NE.		10·0
	2	0	390	37·4	37·1	0·3			1·2	0·5	NE.		10·0
	4	0	391	37·1	36·7	0·4			1·2	0·8	NE.		10·0
	6	0	410	36·3	35·7	0·6			1·2	0·8	NE by N.		10·0
	8	0	440	36·0	35·7	0·3			1·2	0·8	NE.		10·0
	10	0	457	36·8	36·5	0·3			1·2	0·8	NE by N.		10·0
	18	0	29·526	37·8	37·3	0·5			0·8	0·0			10·0
	20	0	535	37·7	37·2	0·5	37·7		0·0	0·0		E.	10·0
	22	0	550	37·9	37·6	0·3	35·3		0·2	0·0			10·0
Feb. 24	0	0	562	39·6	38·5	1·1		0·144	0·2	0·2	ENE.	E by S.	10·0
	2	0	566	39·1	37·9	1·2			0·5	...		E by S.	10·0
	4	0	564	39·3	38·0	1·3			0·2	0·0		E.	10·0
	6	0	572	37·8	36·3	1·5			0·2	0·0		E.	10·0
	8	0	583	36·0	34·8	1·2			0·0	0·0			8·5
	10	0	586	35·6	34·7	0·9			0·0	0·0			10·0
	18	0	29·581	34·7	33·8	0·9			0·0	0·0			10·0
	20	0	594	33·0	32·4	0·6	39·4		0·0	0·0		SSE : N.	9·0
	22	0	590	35·5	34·0	1·5	34·2		0·0	0·0		E by N.	10·0
Feb. 25	0	0	579	36·6	34·3	2·3		0·014	0·0	0·0		E.	10·0
	2	0	559	37·6	35·4	2·2			0·0	0·0			10·0
	4	0	547	35·3	34·5	0·8			0·2	0·0		E.	10·0
	6	0	547	35·3	34·1	1·2			0·0	0·0		E.	10·0
	8	0	571	34·4	33·4	1·0			0·0	0·0			10·0
	10	0	551	33·3	32·8	0·5			0·0	0·0			10·0
Feb. 26	0	0	...	...	...	...	37·2 32·7		0·3				

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	A few flakes of snow.	B
2.	Light shower of hail-snow.	B
4.	A few small hail-stones.	W
6.	A few flakes of snow.	W
8.		B
10.	Id.	B
18.	Light rain.	W
20.	Scud; a few drops of rain.	W
22.	Id.; id.	B
0.	Id.; id.	B
2.	Id.; id., a Scotch mist.	B
4.	Scotch mist.	W
6.	Scud; clouds breaking to SE., cirrous clouds seen.	W
8.		B
10.		B
18.	Scotch mist.	W
20.	Id.	W
22.	Id.	B
0.	Id.	B
2.	Id.	B
4.	Id.	W
6.	Id.	W
8.	Id.	W
10.	Id.	W
18.	Light rain.	B
20.	Scud; light rain; cirrous clouds seen.	B
22.	Id.; id.	W
0.	Id.; id.	W
2.	Id.; id.	W
4.	Id.; id.	W
6.	Id.; id.	W
8.	Id.; id.	W
10.	Id.; id.	W
18.	Light rain.	B
20.	Scud +— cirrous clouds seen above.	B
22.	Scotch mist.	W
0.	Scud +— cirrous clouds.	W
2.	Id.; a few drops of rain.	W
4.	Id.; light rain.	W
6.	Id.; id.	W
8.	Id.	W
10.	Id., a lightish appearance to N., Auroral light?	W
18.	Id.	W
20.	Cirrous scud: woolly cirri, single patches in zenith resembling fleeces of wool; heavy cloud to E.	H
22.	Cirrous scud.	H
0.	Id. +— patches of loose scud.	W
2.	Scud; thick to NE.	H
4.	Cirrous scud; hail lately.	W
6.	Loose scud +— cirrous clouds.	W
8.	Very dark.	D
10.	Id.	D

Göttingen Mean Time of Observation.			Barometer. Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0-10.
Feb. 26	18	0	29·094	34·7	32·3	2·4			1·2	0·8	NE by N.		10·0
	20	0	29·071	33·7	32·0	1·7			1·0	1·0	NE.	ENE : ENE.	10·0
	22	0	29·056	34·3	33·2	1·1	39·3		2·2	1·2	NE.		9·8
Feb. 27	0	0	29·015	36·9	34·2	2·7	32·6		1·2	1·2	NE.	ENE.	8·0
	2	0	28·973	39·0	35·7	3·3		0·000	1·8	1·0	NE.	ENE.	9·9
	4	0	28·962	37·7	36·0	1·7			2·5	1·5	NE.	ENE.	8·0
	6	6	28·972	35·6	33·1	2·5			1·8	0·5	NE.	ENE.	6·0
	8	0	28·991	34·8	31·9	2·9			0·8	0·8	NE.		8·0
	10	0	29·001	33·5	32·9	0·6			1·5	1·0	NE.		10·0
	18	0	29·046	33·6	32·5	1·1			1·8	0·2	NE by N.		4·0
	20	0	085	34·3	32·3	2·0			0·5	0·2	NE by N.	ENE.	9·5
	22	0	139	35·1	33·9	1·2	39·3		1·0	0·2	NE by N.	NE by E.	5·0
Feb. 28	0	0	194	35·8	35·0	0·8	32·7		1·8	0·5	NE by N.	NE by E.	9·0
	2	0	234	38·3	34·4	3·9		0·042	0·5	0·8	NNE.	NE by E.	8·5
	4	0	276	36·0	33·6	2·4			2·0	0·2	NE by N.	NE by E.	4·0
	6	0	329	34·6	31·5	3·1			1·2	0·2	NE by N.	NE by E.	7·0
	8	0	387	32·2	30·0	2·2			0·2	0·0			3·0
	10	0	428	31·2	30·9	0·3			0·2	0·0			10·0
	18	0	29·524	28·2	27·0	1·2			0·8	0·2	NNW.		1·0
	20	0	566	29·9	29·3	0·6			0·8	0·0			7·0
	22	0	608	31·3	29·7	1·6	39·3		0·5	0·2	N by W ?	NNE.	3·0
Mar. 1	0	0	639	33·8	31·2	2·6	26·4		0·2	0·2	N by W.		1·5
	2	0	652	36·6	33·3	3·3		0·091	0·8	0·2	N by W.		9·5
	4	0	676	35·7	32·3	3·4			1·0	1·0	N.		3·5
	6	0	699	33·9	31·4	2·5			0·5	0·0		N ?	5·0
	8	0	732	31·6	30·2	1·4			0·2	0·0			9·8
	10	0	754	33·0	30·5	2·5			0·2	0·2	N by W.		5·0
	18	0	29·824	29·8	...	...			0·5	0·0			10·0
	20	0	854	30·7	29·0	1·7			0·2	0·2	N.	N.	9·0
	22	0	868	34·7	31·2	3·5	37·3		0·2	0·2	N.	NNE.	9·9
Mar. 2	0	0	898	34·8	31·8	3·0	28·5		1·2	0·5		NNE.	10·0
	2	0	894	36·8	33·0	3·8		0·000	0·8	0·5	N by W.		9·0
	4	0	904	36·2	32·4	3·8			1·0	1·2	N.		6·0
	6	0	913	35·2	32·3	2·9			1·0	0·2	N.	N.	10·0
	8	0	939	35·0	31·8	3·2			0·2	0·2	N.		10·0
	10	0	949	34·0	31·3	2·7			0·5	0·2	N.		8·0
	18	0	29·958	32·8	30·7	2·1			0·5	0·0			10·0
	20	0	29·973	33·2	31·1	2·1			0·2	0·0			10·0
	22	0	29·995	34·3	31·1	3·2	36·7		0·2	0·2	N by W.	NE.	7·0
Mar. 3	0	0	30·007	36·3	33·0	3·3	29·7		0·5	0·2	N by E.	N.	3·0
	2	0	30·023	38·0	34·2	3·8		0·000	0·2	0·2		N.	6·0
	4	0	30·017	37·8	34·3	3·5			0·5	0·2	N.	NNE.	8·0
	6	0	30·037	36·6	33·6	3·0			0·0	0·0		NNE.	9·0
	8	0	30·078	33·9	31·7	2·2			0·0	0·0			8·0
	10	0	30·095	35·0	31·5	3·5			0·0	0·0			10·0
	18	0	30·111	23·8	22·9	0.9			0·0	0·0			0·0
	20	0	137	20·9	20·3	0·6			0·0	0·0			0·0
	22	0	149	28·4	26·9	1·5	38·1		0·0	0·0			0·5
Mar. 4	0	0	141	35·9	33·0	2·9	20·2		0·0	0·0		NW ?	1·0
	2	0	112	39·6	35·2	4·4		0·000	0·0	0·2	W.		0·2
	4	0	104	41·0	35·6	5·4			0·5	0·2	WSW.		1·0
	6	0	083	36·4	34·2	2·2			0·5	0·0			7·0
	8	0	091	33·0	31·3	1·7			0·2	0·2	SW by W.		0·0
	10	0	083	31·7	30·6	1·1			0·5	0·2	SW by W.		0·3

	SPECIES OF CLOUDS, &c.	Observer's Initial.
h.		
18.	Scud; a slight sprinkling of snow has fallen during the night.	W
20.	Id: linear cirri; very fine snow beginning to fall.	W
22.	Nearly as before; fine snow; sky to NE.	B
0.	Scud ← woolly cirri, cumulo-strati on NE. horizon.	W
2.	Large masses of loose cumuli and scud.	B
4.	Scud ← woolly cirri and large cirro-cumuli, cumuli on NE. horizon.	W
6.	Scud on horizon ← large cirro-cumuli, loose cumuli and cumulo-strati on horizon.	W
8.		B
10.	Occasional slight showers of snow.	B
18.	Scud; a large mass of clouds to E.	W
20.	Loose scud ← cirrous clouds.	W
22.	Loose cumuli ← fine cumuli to NE. and E.	B
0.	Loose cumuli and scud; snow and hail lately.	B
2.	Id.	B
4.	Masses of scud and cumuli ← fine mottled cirri.	W
6.	Loose scud ← cirro-strati to N., loose cumuli on N. and NE. horizon.	W
8.	Thin scud to NW.	B
10.	A slight fall of snow since last observation.	B
18.	Scud to E.; ¾ inch of snow has fallen during the night.	W
20.	Snowing.	W
22.	Cirrous scud.	B
0.	Loose cumuli to SE. and cirri to S.	B
2.	As before.	B
4.	Scud to W.; cirri; cumuli and cumulo-strati on horizon from N. to E.	W
6.	Thin scud ← thick cirrous clouds to NE.; cirri and cumuli to S.	W
8.		B
10.	Scud.	B
18.	Id.	W
20.	Cirro-cumulous scud ← woolly cirri and cirro-cumuli.	W
22.	Id.	B
0.	Id.	B
2.	Id.	B
4.	Scud and loose cumuli, woolly cirri; cumuli to N. and W.	W
6.	Cirro-cumulous scud ← cirrous clouds.	W
8.		B
10.		B
18.		W
20.	Cirro-cumulous scud.	W
22.	Id.	B
0.	Woolly cirri lying in lines radiating from N.; cumulo-strati on NE. horizon.	B
2.	Loose cumuli ← woolly cirri and cirrous haze.	B
4.	Scud ← fine woolly cirri.	W
6.	Id. ← id.	W
8.		B
10.		B
18.	Haze on E. horizon.	W
20.	Thin cirrous haze to E.	W
22.	Id., and N. 23^{h}, Thermometer exposed to the sun 65°.	B
0.	Network and beautifully mottled cirri, moving very slowly; cirrous haze round horizon.	B
2.	A few patches of cirrous clouds near horizon to E. and S.	W
4.	Very fine curled and mottled cirri, patches of loose cumuli to S. and E.; haze on E. and N. horizon.	W
6.	Linear cirri pointing towards NNE., woolly, striated, and reticulated cirri; haze to N.	W
8.	Thin haze to W.; a small corona round the moon.	W
10.	A bank of clouds on N. horizon.	W

Göttingen Mean Time of Observation.			BAROMETER. Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Mar. 5	0	0	...	...	...	...	41·2 ? 29·0		1·3				
	18	0	29·919	36·1	35·1	1·0			2·5	0·0			7·0
	20	0	925	37·3	36·4	0·9	44·4 34·6		0·0	0·0			9·5
	22	0	925	43·1	40·6	2·5			0·0	0·0			9·5
Mar. 6	0	0	921	46·0	43·1	2·9		0·000	0·0	0·0		SSW.	9·5
	2	0	910	48·4	45·3	3·1			0·2	0·2	SSW.	SSW.	9·0
	4	0	925	47·8	44·9	2·9			0·8	0·2	SSW ?	SSW.	10·0
	6	0	926	45·0	43·6	1·4			0·2	0·0		SSW.	9·9
	8	0	946	42·8	42·3	0·5			0·2	0·0			10·0
	10	0	957	42·0	40·8	1·2			0·2	0·0			10·0
	18	0	29·970	38·2	37·7	0·5			0·0	0·0			10·0
	20	0	29·978	40·8	39·5	1·3	50·2 34·3		0·0	0·0			10·0
	22	0	29·982	42·1	40·6	1·5			0·0	0·0		S by E.	10·0
Mar. 7	0	0	29·994	45·8	42·7	3·1		0·000	0·2	0·2	S.	S by E.	10·0
	2	0	29·987	44·9	39·8	5·1			1·2	1·0	S.	S by E.	3·0
	4	0	29·979	45·3	40·0	5·3			1·0	0·8	S.		1·0
	6	0	29·995	40·7	37·3	3·4			0·5	0·2			1·0
	8	0	30·025	34·3	32·7	1·6			0·2	0·0			0·0
	10	0	30·030	32·7	30·6	2·1			0·0	0·0			0·0
	18	0	30·105	24·3	24·0	0·3			0·0	0·0			0·0
	20	0	125	24·0	23·0	1·0	46·8 21·2		0·0	0·0			0·0
	22	0	143	29·1	28·4	0·7			0·0	0·0			0·0
Mar. 8	0	0	158	35·0	32·7	2·3		0·000	0·0	0·0			0·0
	2	0	148	41·7	37·7	4·0			0·0	0·0			0·0
	4	0	135	43·7	39·2	4·5			0·0	0·0			0·0
	6	0	120	41·2	38·1	3·1			0·0	0 0			0·0
	8	0	138	33·3	31·7	1·6			0·0	0·0			0·0
	10	0	148	28·9	27·4	1·5			0·0	0·0			0·0
	18	0	30·148	27·2	26·6	0·6			0·2	0·0			2·5
	20	0	150	29·7	28·8	0·9	44·1 24·9		0·0	0·0		NW ?	6·0
	22	0	135	33·0	31·3	1·7			0·0	0·0			1·5
Mar. 9	0	0	120	39·9	37·3	2·6		0·000	0·0	0·0			2·0
	2	0	085	43·3	38·8	4·5			0·5	0·2	SW.		6·0
	4	0	085	42·6	39·0	3·6			0·5	1·2	WSW ?	SW.	9·0
	6	0	062	38·8	37·0	1·8			0·5	0·0		W by S.	9·0
	8	0	042	38·3	36·6	1·7			0·2	0·0		WSW.	9·9
	10	0	027	36·4	34·7	1·7			0·2	0·0			2·0
	18	0	29·836	35·1	33·6	1·5			0·2	0·0			10·0
	20	0	815	35·1	34·0	1·1	44·2 32·1		0·0	0·0			10·0
	22	0	784	35·4	34·8	0·6			0·0	0·0			10·0
Mar. 10	0	0	777	39·2	38·7	0·5		0·230	0·0	0·0			10·0
	2	0	731	36·6	36·3	0·3			0·0	0·0			10·0
	4	0	728	41·2	40·0	1·2			0·2	0·0		SW by W.	10·0
	6	0	748	40·1	39·6	0·5			0·0	0·0		W by S.	3·0
	8	0	783	34·7	34·6	0·1			0·0	0·0			0·5
	10	0	806	32·7	31·9	0·8			0·0	0·0			0·5
	18	0	29·884	35·8	35·4	0·4			0·0	0·0			10·0
	20	0	908	38·0	37·7	0·3	44·2 30·5		0·0	0·0			10·0
	22	0	918	42·8	42·0	0·8			0·0	0·0		W.	9·9
Mar. 11	0	0	902	49·0	46·1	2·9		0·013	0·0	0·0		W.	10·0
	2	0	872	48·9	46·1	2·8			0·2	0·0		W.	10·0
	4	0	844	48·8	45·6	3·2			0·2	0·2	SW ?	W.	10·0

Quantity of Clouds.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0—10.	h.	
7·0	18. Cirrous clouds and haze.	B
9·5	20. Scud and cirro-strati to E., sky to E.	B
9·5	22. Scud, cirro-strati to S. and E.	W
9·5	0. Scud ← cirro-strati to S. and E.	W
9·0	2. Id. ← fine woolly cirri; cumulo-strati on horizon from NE. to S.	W
10·0	4. Id. ← cumuli to E.; patches of sky occasionally.	B
9·9	6. Id. ← id.	W
10·0	8. Id.	W
10·0	10. Id.	W
10·0	18. Id.	B
10·0	20. Id.	W
10·0	22. Id. and mist.	W
10·0	0. Scud and loose cumuli.	W
3·0	2. Cirrous scud, loose cumuli, and cirro-strati.	B
1·0	4. Patches of cirrous clouds, hazy on horizon.	B
1·0	6. Id. id.	W
0·0	8. A distinct auroral arch, altitude 10°, breadth 8°, its crown being in the magnetic meridian; no pencils.	W
0·0	10. Clear.	W
0·0	18. Id.	B
0·0	20. Id.	B
0·0	22. Id., cirrous haze on horizon.	W
0·0	0. Id., id.	W
0·0	2. Id., id.	W
0·0	4. Id., id.	W
0·0	6. Id., id.	W
0·0	8. Id.	W
0·0	10. Id.	W
2·5	18. Linear cirri or cirrous haze to E.	B
6·0	20. Loose cirro-cumuli in zenith ← thick woolly cirri to E., very red at 19h; cymoid cirri at 19h.	B
1·5	22. Patches of cirro-cumuli; linear cirri to SW., pointing NW.; cirrous haze on horizon.	W
2·0	0. Cirro-cumuli and fine woolly and mottled cirri; haze on horizon.	W
6·0	2. Long lines of cirri lying in different directions, but chiefly towards WNW., as if indicating wind; cirrous haze near horizon.	W
9·0	4. Scud moving quickly ← thick cirrous clouds and haze over the sky.	B
9·0	6. Cirro-cumulous scud moving slowly ← woolly cirri, thick cirrous clouds; cirrous haze on horizon.	W
9·9	8. Cirro-cumulous scud.	W
2·0	10. Patches of cirrous clouds; faint lunar halo.	W
0·0	18.	B
0·0	20. Light fall of snow.	B
0·0	22. A few drops of sleet.	W
0·0	0. Light rain.	W
0·0	2. Raining.	W
0·0	4. Scud.	W
3·0	6. Patches of loose scud ← patches of woolly and curled cirri, linear cirri to W. pointing N. and S., cirro-strati and cumuli to NE.; a long mass of cumulous scud to E., fringed with woolly cirri.	W
0·5	8. Patches of cirrous clouds.	W
0·5	10. Id.	W
0·0	18.	B
0·0	20. Scud.	B
9·9	22. Cumulous scud ← cirrous clouds seen above to S.	W
0·0	0. Id.	W
0·0	2. Scud.	W
0·0	4. Id. ← cirrous haze above.	B

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Mar. 11	6	0	29·821	44·5	43·0	1·5			0·5	0·2	SW.	W.	10·0
	8	0	794	42·8	42·1	0·7			0·5	0·5	SW.	W.	10·0
	10	0	766	42·8	42·0	0·8			0·5	0·2	SW.	W.	10·0
Mar. 12	0	0	...	...	...	...	53·0 42·3		1·5				
	18	0	29·255	37·6	35·3	2·3			1·8	0·5	SW by W.		2·5
	20	0	256	38·4	36·6	1·8	52·2 35·7		0·5	0·5	WSW.	W.	6·0
	22	0	245	41·7	38·2	3·5			1·2	1·2	SW by W.		4·0
Mar. 13	0	0	228	43·7	42·2	1·5		0·013	2·8	1·8	SW by W.	W.	9·5
	2	0	217	43·7	39·4	4·3			5·0	1·0	WNW.	W.	10·0
	4	0	213	42·3	38·7	3·6			2·8	1·2	WNW.	W.	9·9
	6	0	198	40·9	37·8	3·1			1·2	0·2	WNW.		10·0
	8	0	186	39·6	36·4	3·2			0·5	0·2		W.	10·0
	10	0	155	38·9	36·0	2·9			0·5	0·5	WSW.	W.	9·9
	18	0	29·123	31·2	30·3	0·9			0·2	0·0			0·2
	20	0	155	34·6	33·0	1·6			0·0	0·0			0·2
	22	0	182	39·7	36·9	2·8	44·4 28·5		0·0	0·0		W.	2·0
Mar. 14	0	0	195	43·0	38·6	4·4		0·031	0·2	0·0		W.	6·0
	2	0	211	43·8	40·3	3·5			0·8	0·2	WSW.	W.	9·0
	4	0	206	46·7	46·0	0·7			0·8	0·5	SW by W.	W.	7·0
	6	0	215	41·7	38·0	3·7			0·5	0·5	SW by W.	W.	10·0
	8	0	250	38·2	37·0	1·2			0·8	0·2			9·5
	10	0	266	37·7	35·1	2·6			0·2	0·0		W.	3·0
	18	0	29·447	28·3	27·6	0·7			0·5	0·0			1·0
	20	0	501	30·4	29·7	0·7			0·0	0·0		W.	3·0
	22	0	559	37·0	36·2	0·8	47·1 26·8		0·0	0·0		WNW.	7·0
Mar. 15	0	0	586	43·2	39·3	3·9		0·007	0·0	0·0		W by N.	5·0
	2	0	601	47·8	46·6	1·2			0·2	0·0		W.	7·0
	4	0	616	47·3	40·9	6·4			0·5	0·2	SW by W.	W.	9·5
	6	0	637	43·7	40·0	3·7			0·8	0·2		W.	10·0
	8	0	697	39·1	37·1	2·0			0·5	0·2	NE by N.		10·0
	10	0	755	37·2	35·4	1·8			0·5	0·0			10·0
	18	0	29·811	33·5	32·8	0·7			0·0	0·0			10·0
	20	0	824	34·8	33·6	1·2			0·0	0·0			10·0
	22	0	813	39·8	37·7	2·1	49·9 31·7		0·2	0·0			10·0
Mar. 16	0	0	795	41·9	39·0	2·9		0·000	1·0	1·2	SSE.	S.	10·0
	2	0	756	41·0	38·8	2·2			1·2	0·2	SSE.		10·0
	4	0	698	41·3	39·4	1·9			0·8	0·2	S by E.		10·0
	6	0	647	41·9	40·3	1·6			0·2	0·0		S by W.	10·0
	8	0	604	41·6	41·0	0·6			0·8	0·2	SSE.		10·0
	10	0	575	43·2	42·3	0·9			0·5	0·0			10·0
	18	0	29·472	44·6	43·2	1·4			2·8	1·0	SW by S.	SW by S.	10·0
	20	0	496	44·4	43·3	1·1			2·0	0·8	SW.	SW by S.	10·0
	22	0	510	44·7	43·5	1·2	42·9 40·9		1·0	0·5	SW.	SW by S.	10·0
Mar. 17	0	0	511	46·8	44·9	1·9		0·000	1·2	1·0	SW.	WSW.	10·0
	2	0	522	46·8	44·9	1·9			1·8	1·0	SW by W.	WSW.	10·0
	4	0	525	47·6	45·3	2·3			1·5	0·5	SW by W.	WSW.	10·0
	6	0	515	46·3	44·6	1·7			1·7	0·7	SW by W.	SW.	9·0
	8	0	540	45·8	44·1	1·7			1·2	0·0			10·0
	10	0	550	46·1	44·6	1·5			2·5	1·0	SW by W.		10·0
	18	0	29·584	43·1	42·4	0·7			1·2	0·0			8·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
6.	Scud.	W
8.	Id.	W
10.	Id.	W
18.	Masses of scud.	W
20.	Loose scud ← woolly cirri and cirro-cumuli to E., cumuli and cumulo-strati on horizon.	W
22.	Masses of scud to W. and S.; woolly cirri to E.; patches of scud and cumuli on horizon.	W
0.	Scud ← cirrous clouds to S. and SE.; loose cumuli on N. and S. horizon, a slight shower in 10 minutes, showers around.	W
2.	As before.	B
4.	Scud ← loose cumuli on horizon to N. and NE.; passing showers.	W
6.	Id.; cirrous clouds; cumuli and cumulo-strati on horizon, light shower.	W
8.	Scud, having a cirro-cumulous disposition.	B
10.	Id., id.; cirrous haze above; at 10^h 10^m a beautiful lunar halo, the ring very narrow.	B
18.	Small patches of scud to N.	W
20.	Id.	W
22.	Loose cumuli and scud.	B
0.	Id.	B
2.	Id. ← cumulo-strati to N.; rain to S. and SE.	B
4.	Masses of scud ← loose cumuli on horizon, cirro-strati to E. Sea-gulls seen coming from the sea.	W
6.	Scud ← cumuli and cumulo-strati on horizon from NE. to S.; slight shower.	W
8.	As before; slight shower lately.	B
10.	Scud ← thin cirrous clouds.	B
18.	Cumuli and cumulo-strati on NE. and E. horizon; ground covered with hoar-frost.	W
20.	Fine woolly and striated cirri ← patches of loose cumuli to S. and E.	W
22.	Masses of woolly cirri, curled at the edges, pointing from WNW.; finer cirri above.	B
0.	Nearly as before; detached masses of scud and loose cumuli ← some of the cirri are linear and flame-like, the lines branching off from the main body, which lies NW. and SE., and point to WSW. or SW.	B
2.	Scud, loose cumuli and cumulo-strati ← cirrous haze to E. A thermometer in the sun, sheltered from the wind, shewed 85°.	B
4.	Loose cumuli ← woolly cirro-cumuli.	W
6.	Scud ← large cirro-cumuli, linear cirri to S., pointing E. and W.; loose cumuli all round the horizon; rain falling to N. from dark scud.	W
8.	Scud.	B
10.	Id.	B
18.	Scud, cirrous clouds above.	W
20.	Hazy cirrous clouds; cumuli and cirro-strati on horizon.	W
22.	Scud; haze above?	B
0.	Patches of scud ← thick mass of cirrous haze or cirro-stratus.	B
2.	As before; a few drops of rain.	B
4.	Scud.	W
6.	Id.; a few drops of rain.	W
8.	Scotch mist.	B
10.	Scud, clouds breaking.	B
18.	Scud.	W
20.	Id.	W
22.	Id.; light rain.	B
0.	Id.; id. occasionally.	B
2.	Id.	B
4.	Id.	W
6.	Loose scud ← cirrous clouds, linear cirri to S. pointing towards W by N., loose cumuli to N. and E.	W
8.	Scud.	B
10.	Id.	B
18.	Masses of scud to N. and E., woolly cirro-cumuli and woolly cirri lying SW. and NE.; cirro-strati to SE.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Mar. 17	20	0	29·616	42·2	42·0	0·2	47·8 41·6	0·000	0·2	0·0			6·0
	22	0	648	49·1	47·2	1·9			0·2	0·2	SW by W.	W.	9·5
Mar. 18	0	0	669	54·6	50·9	3·7			0·2	0·0	W.		9·8
	2	0	679	58·1	53·0	5·1			0·0	0·0		W by S.	9·9
	4	0	688	53·4	49·7	3·7			0·2	0·5	NE by E.		9·8
	6	0	708	48·7	46·7	2·0			0·5	0·2	NE.	ENE.	9·0
	8	0	740	44·5	43·8	0·7			0·5	0·2	NE by E.		10·0
	10	0	756	43·7	43·0	0·7			0·2	0·2	NE by N.		10·0
Mar. 19	0	0	...	...	...	...	61·5 40·5		0·3				
	18	0	29·660	41·0	39·0	2·0	53·3 39·3	0·000	1·2	0·2	E by N.	E.	10·0
	20	0	634	40·5	39·8	0·7			0·2	0·2	E.	E.	10·0
	22	0	611	44·4	42·5	1·9			0·2	0·0		SSE.	7·0
Mar. 20	0	0	583	48·0	45·1	2·9			0·5	0·0		SSE.	9·9
	2	0	554	46·4	44·0	2·4			0·2	0·0		SSE.	10·0
	4	0	502	42·7	41·8	0·9			0·5	0·5	NE by E.	ENE : SE by E : SW by W.	9·0
	6	0	471	40·9	39·9	1·0			0·5	0·2	E.	E by S : SE by E : 0 ?	9·5
	8	0	441	39·7	38·8	0·9			0·2	0·0			9·9
	10	0	412	39·9	39·1	0·8			0·5	0·0			10·0
	18	0	29·212	41·8	41·4	0·4	50·2 38·6	0·039	0·5	0·0		SSE ?	10·0
	20	0	200	43·8	43·0	0·8			0·0	0·0		SSE.	10·0
	22	0	197	49·8	49·1	0·7			0·5	0·2	SE by S.	SSE.	9·8
Mar. 21	0	0	189	52·4	49·7	2·7			1·5	1·0	S by E.	S.	9·5
	2	4	184	54·1	49·2	4·9			1·8	0·8	SSE.	S.	7·0
	4	0	182	54·2	50·0	4·2			0·5	0·2	SE by S.	S.	8·5
	6	0	218	49·3	46·3	3·0			1·0	0.2	SW by S ?	Varying.	9·0
	8	0	220	45·5	44·5	1·0			0·5	0·0		SSW.	10·0
	10	0	200	43·0	42·7	0·3			0·2	0·0			0·0
	18	0	29·127	47·7	45·7	2·0	57·0 42·6	0·290	0·0	0·0		S by W ?	10·0
	20	0	122	47·5	46·0	1·5			0·2	0·2	S by E.	SSE.	10·0
	22	0	136	48·0	47·0	1·0			0·8	0·2	S by E.		10·0
Mar. 22	0	0	117	53·7	50·6	3·1			1·2	1·2	S by E.	SSE.	4·0
	2	0	127	58·0	52·4	5·6			2·5	1·5	S by W.	S by W.	7·0
	4	0	134	59·2	51·8	7·4			1·2	0·8	S by W.	SSW.	7·0
	6	0	175	54·0	48·8	5·2			0·2	0·2	S by W.	SSW.	7·5
	8	0	219	47·7	45·6	2·1			0·0	0·0		S.	5·0
	10	0	239	46·2	44·7	1·5			0·0	0·0			8·0
	18	0	29·143	48·8	46·8	2·0	58·8 45·3	0·125	2·0	0·2		ESE.	10·0
	20	0	170	48·9	47·0	1·9			1·2	0·8	E by S.	SSE.	10·0
	22	0	159	45·8	42·2	3·6			0·2	0·0	NNE.	SSE.	10·0
Mar. 23	0	0	184	48·2	48·0	0·2			0·0	0·0		SSE.	10·0
	2	0	205	55·4	52·0	3·4			0·5	0·8	SE by S.	S by E.	7·0
	4	0	236	53·7	51·0	2·7			1·2	0·8	SSE.	E by S ?	10·0
	6	0	311	51·2	48·7	2·5			1·2	0·0			6·0
	8	0	374	44·7	43·2	1·5			0·2	0·0			0·5
	10	0	421	41·2	40·8	0·4			0·0	0·0			5·0
	18	0	29·527	39·8	39·8	0·0	55·3 36·2	0·062	0·0	0·0			10·0 ?
	20	0	556	42·6	42·2	0·4			0·2	0·2	NE by N.		10·0
	22	0	571	44·1	43·7	0·4			0·5	0·5	E by N.		10·0
Mar. 24	0	0	591	45·7	44·9	0·8			0·2	0·8	NE.	E by S.	10·0
	2	0	592	43·7	42·4	1·3			1·8	1·8	ENE.	E by N.	10·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
20.	Woolly cirri, cirro-cumuli, and fine linear cirri, all lying WSW. to ENE.; masses of loose cumuli near horizon all round, cumulo-strati to E.	W
22.	A few patches of scud ←— loose cumulo-strati; cirrous haze.	B
0.	Patches of scud; large loose cirro-cumuli; cumulo-strati to NNE.	B
2.	Masses of scud ←— cumulo-strati above cumuli to N. and E.	W
4.	Large loose cirro-cumuli; cirrous haze.	W
6.	Patches of scud moving quickly ←— lines of cirro-strati and linear cirri rising from a semicircular nucleus on E. horizon and radiating from that [point.	W
8.		B
10.		B
18.	Scud.	B
20.	Thick scud; breaking to ENE. where cirrous clouds are seen above.	B
22.	Loose scud ←— patches of woolly cirri; ranges of loose cumuli to S. and E.	W
0.	Scud ←— cirrous clouds.	W
2.	Thick scud; raining to NW.	W
4.	Thin misty scud apparently close to the ground and moving very rapidly: thick scud moving less quickly: woolly cirri moving very slowly; [the horizon seems covered with the thin scud.	B
6.	Thin scud: scud: cirrous clouds.	B
8.	Scud.	W
10.	Id.	W
18.	Id.; light rain.	B
20.	Id.	B
22.	Id. ←— woolly cirro-cumuli and fine linear cirri lying N. and S.; cumulo-strati and loose cumuli near [horizon.	W
0.	Scud and loose cumuli ←— woolly cirri and cirro-cumuli.	W
2.	Detached masses of cumuli ←— cirro-cumuli.	W
4.	Scud and masses of woolly cirro-cumuli.	B
6.	A large mass of electric clouds moved up from SSW.; at first the W. was covered, but the tendency of the whole is towards the E.; the clouds at first appeared to be acted on by several currents, now they appear to move from SSE. and SE.; large drops of rain; sky to E. with beau- [tiful cumulo-strati to SSE.	B
8.	Heavy showers, scud.	B
10.	Clear.	W
18.	Scud in different strati, moving very slowly ←— cumulo-strati and cirro-strati to E., the latter quite red.	B
20.	Scud; light rain.	B
22.	Raining.	W
0.	Patches of cirrous scud ←— A mass of clouds covers the sky from NW., by E. to SE. to an altitude of 40°, curled cirri at the edges, apparently becoming haze to NE.; cumulo-strati near horizon; cumuli to SW.	W
2.	Detached masses of loose cumuli ←— the sky almost completely covered with thin crossed woolly cirri; cirrous haze on E. horizon.	W
4.	Masses of loose cumuli and cumulo strati ←— woolly cirrous clouds.	B
6.	Large masses of cumulo-strati ←— cirrous clouds.	B
8.	Thick masses of scud.	W
10.		H
18.	Scud.	H
20.	Id.	H
22.	Id.; smart shower.	B
0.	Id. ←— cumulo-strati to S.; breaking to S.	W
2.	Id.	D
4.	Id.; light rain.	W
6.	Hazy clouds on E. horizon.	H
8.	Small patches of scud; cirrous haze on horizon.	W
10.	Scud.	D
18.	Thick fog.	B
20.	Fog clearing off.	B
22.	Fog.	W
0.	Scud; light rain.	W
2.	Scud; raining lately; clearing to S.	W

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Mar. 24	4	0	29·614	43·0	41·0	2·0			2·2	0·8	E by N.	E by S.	10·0
	6	0	650	42·9	41·0	1·9			0·8	0·2	E by N.	ESE.	10·0
	8	0	687	42·8	40·9	1·9			0·5	0·2	E by N.	ESE.	10·0
	10	0	696	43·1	40·8	2·3			0·8	0·5	E by N.		10·0
	18	0	29·796	42·3	40·0	2·3			0·8	0·2	ENE.	SE.	10·0
	20	0	842	42·2	40·0	2·2			0·2	0·2	ENE.	S.	9·5
	22	0	864	42·9	40·3	2·6	45·1 41·5		0·8	0·8	ENE.	E by S : E by S.	9·9
Mar. 25	0	0	875	46·0	42·2	3·8		0·000	1·0	0·5	ENE.	E by S.	3·5
	2	0	884	46·3	41·7	4·6			1·8	2·2	ENE.	E by N : E.	3·5
	4	0	880	42·2	38·3	3·9			3·0	2·2	E by N.	ESE.	2·0
	6	0	910	41·2	38·0	3·2			3·0	1·2		W.	2·0
	8	0	924	37·7	35·9	1·8			1·0	0·2	NE.		0·0
	10	0	928	36·6	35·6	1·0			1·0	1·2	NE.		0·0
Mar. 26	0	0	...	...	...	...	46·4 34·5		2·0				
	18	0	29·808	34·0	32·0	2·0			4·0	1·8	ENE.	E by S.	10·0
	20	0	810	34·3	31·9	2·4			1·5	0·5	ENE.	E by S.	10·0
	22	0	814	35·1	32·8	2·3	45·5 32·3		2·0	...	E by N.	E.	10·0
Mar. 27	0	0	812	36·1	33·9	2·2		0·055	2·8	1·2	E by N.	E.	10·0
	2	0	811	35·0	33·0	2·0			2·2	1·5	E by N.	E by S.	10·0
	4	0	790	35·6	32·7	2·9			2·2	1·5	ENE.	E by S.	10·0
	6	0	783	35·4	32·3	3·1			1·5	1·0	E by N.	E.	10·0
	8	0	791	34·8	31·6	3·2			1·2	0·8	E by N.		10·0
	10	0	784	34·2	31·6	2·6			1·2	0·5	E by N.		10·0
	18	0	29·751	35·3	32·9	2·4			0·8	0·0		E.	9·9
	20	0	760	36·2	33·4	2·8			0·0	0·0		E.	9·9
	22	0	768	39·0	35·6	3·4	36·0 33·6		0·5	0·5	E.	E.	9·5
Mar. 28	0	0	764	41·4	37·0	4·4		0·000	1·2	0·8	E by N.	E.	9·0
	2	0	770	42·6	38·0	4·6			1·0	0·5	ENE.	E.	8·0
	4	0	765	40·0	35·6	4·4			1·0	0·5	E by N.	E by N.	5·0
	6	0	771	38·7	35·0	3·7			...	0·5	ENE.	E.	2·0
	8	0	794	34·2	32·3	1·9			0·5	0·0		E.	3·0
	10	0	804	30·5	29·4	1·1			0·0	0·0		SE ?	2·0
	18	0	29·842	24·1	23·7	0·4			0·0	0·0			1·5
	20	0	858	27·9	27·3	0·6			0·0	0·0		E by N.	3·0
	22	0	857	33·2	31·6	1·6	42·9 22·9		0·0	0·0		E : WNW.	2·5
Mar. 29	0	0	858	41·0	38·4	2·6		0·000	0·0	0·0		Various : NE ?	1·5
	2	0	836	44·7	40·0	4·7			0·0	0·0			0·5
	4	0	823	47·1	42·0	5·1			0·5	0·0		S.	0·2
	6	0	792	45·8	40·3	5·5			0·2	0·0			0·1
	8	0	802	36·0	33·6	2·4			0·0	0·0			0·0
	10	0	777	33·9	32·5	1·4			0·0	0·0			0·0
	18	0	29·663	26·6	26·6	0·0			0·0	0·0			0·5
	20	0	610	29·3	29·0	0·3			0·0	0·0			0·4
	22	0	567	37·0	35·4	1·6	48·9 24·7		0·0	0·0			9·5
Mar. 30	0	0	518	43·6	39·3	4·3		0·000	0·0	0·0			10·0
	2	0	436	48·2	44·7	3·5			0·0	0·0		S by W.	8·0
	4	0	340	50·0	45·3	4·7			0·2	0·2	SE.	S by W ?	10·0
	6	0	260	46·6	44·3	2·3			0·5	0·0		S.	10·0
	8	0	177	46·8	45·2	1·6			0·5	0·0			10·0
	10	0	108	47·8	46·7	1·1			0·5	0·5	S by E.		10·0
	18	0	28·969	46·4	44·3	2·1			3·5	3·8	SW.	SW by W.	3·0

SPECIES OF CLOUDS, &c.	Observer's Initial.
h.	
4. Scud.	B
6. Id.	B
8. Id.	W
10. Dark.	W
18. Different strata of clouds, the lowest scud ; a few drops of rain.	B
20. As before ; no rain.	B
22. Scud : cirrous scud +— cirrous clouds.	W
0. Id. +— patches of woolly cirro-cumuli to S.	W
2. Id. : scud +— loose cumuli on horizon.	W
4. Scud or loose cumuli.	B
6. Loose cirrous clouds, chiefly to E., moving very slowly.	B
8. Clear.	W
10. Id. ; several shooting stars seen.	W
18. Scud ; snowing ; a small quantity of snow has fallen during the night.	W
20. Id. ; a few flakes of snow.	W
22. Id. id.	B
0. Id.	B
2. Id.	W
4. Id.	W
6. Id.	W
8. Id.	W
10. Id.	B
18. Id.	W
20. Id.	W
22. Scud or loose cumuli in large masses.	B
0. Id. id.	B
2. Id. id.	W
4. Id. id.	W
6. Detached masses of loose cumuli and scud.	W
8. Id.	W
10. Scud ?	B
18. Patches of loose cumuli to W. ; cumulo-strati on E. horizon ; cirrous haze to S.	W
20. Thin scud +— cumulo-strati to N. ; linear cirri to S. lying ESE. to WNW.	W
22. Detached patches of loose cumuli in strata on N. and E. horizon : linear cirri lying and pointing from [NW. to SE.	B
0. Masses of cirrous scud, some of which at an altitude of about 80° from ENE. is evidently in an eddy, as the mass remains nearly stationary, whilst its parts move in all directions, tending principally towards NE., but vanishing in its evolutions : linear cirrous clouds.	B
2. Patches of cirrous clouds ; patches of cumuli to N.	B
4. Patches of cirrous scud to W., which grow quickly into larger masses and then disappear +— small patches of cumuli to N.	W
6. Cirrous clouds on E. horizon.	W
8. Clear.	W
10. Id. An auroral arch, the crown to NNW., altitude 15° ; it shortly loses the form of the arch ; no streamers.	W
18. Cumulo-strati on E. horizon ; cirrous haze all round the horizon ; much hoar-frost.	W
20. Chiefly woolly cirri ; indistinct linear cirri in cirrous haze to N., lying ESE. to WNW. ; cirrous haze all [round the horizon.	W
22. Thick mass of cirrous clouds and haze.	B
0. Id.	W
2. Cirrous scud +— cumulo-strati to N. and E. ; loose cumuli to S. ; cirrous haze.	W
4. Small patches of cirrous scud +— long lines of linear cirri to NE. lying NNW. to SSE., curled to S. ; sky covered with cirrous haze.	W
6. Loose scud ; cirrous haze ; light rain till 5^h 50^m.	W
8. Scotch mist.	B
10. Id.	B
18. Masses of scud moving quickly +— fine linear cirri to NE. pointing NNW. ; cirrous haze.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			1–10.
Mar. 30	20	0	29·040	46·6	44·6	2·0	52·3 44·8		3·2	1·2	SW.	SW by W.	9·5
	22	0	048	49·6	46·9	2·7			2·5	2·8	SW by S.	WSW.	6·0
Mar. 31	0	0	058	52·2	48·3	3·9		0·069	2·2	3·0	SW by S.	WSW.	5·0
	2	0	086	51·7	48·0	3·7			1·5	2·2	SW by S.	SW by S : WSW.	7·0
	4	0	093	52·4	49·6	2·8			2·2	0·8	SW.	SW.	10·0
	6	0	094	49·5	47·3	2·2			0·8	0·0		SW by W.	10·0
	8	0	082	46·6	45·7	0·9			1·0	0·8	SW by S.	SW by S.	8·0
	10	0	102	47·5	46·2	1·3			0·5	0·5	SW by S.		10·0
	18	0	29·089	46·3	45·4	0·9	56·3 44·7		0·5	0·0		SW by S.	10·0
	20	0	29·092	47·9	46·0	1·9			0·5	0·0		SW by S.	10·0
	22	0	29·077	50·3	47·6	2·7			0·5	0·0		S.	10·0
Apr. 1	0	0	29·047	52·8	48·0	4·8		0·000	2·2	1·0	S.	S.	10·0
	2	0	28·995	53·8	51·0	2·8			2·8	2·0	S by E.	S.	10·0
	4	0	28·967	53·6	51·7	1·9			2·0	0·0		S.	10·0
	6	0	28·954	53·0	50·4	2·6			1·8	0·2	SSW.	S by W.	10·0
	8	0	28·953	49·3	48·3	1·0			0·8	0·5	SSW.	SSW.	9·9
	10	0	28·973	48·7	47·5	1·2			0·2	0·5	SW.		10·0
Apr. 2	0	0	...	...	...	...	58·4 45·7		0·0				
	18	0	29·268	45·0	44·2	0·8	59·3 44·3		0·8	0·0		W ½ N.	6·0
	20	0	338	49·0	47·0	2·0			0·2	0·8	W by S.	W : S	9·0
	22	0	380	53·9	48·9	5·0			1·0	0·5	WSW.	W.	7·0
Apr. 3	0	0	414	53·6	48·2	5·4		0·330	2·0	0·8	WSW.	W.	8·5
	2	0	443	54·0	47·6	6·4			1·0	0·5	SW by W.	W.	9·5
	4	0	419	54·8	48·5	6·3			1·0	0·8	SW by W.	WSW : WSW.	8·0
	6	0	417	50·2	45·2	5·0			1·2	0·8		WSW.	8·0
	8	0	417	41·9	40·2	1·7			0·5	0·0			5·0
	10	0	398	40·9	39·0	1·9			0·0	0·0			1·0
	18	0	29·236	40·3	38·8	1·5	56·2 37·9		0·0	0·0		SSE.	6·0
	20	0	206	44·0	43·0	1·0			0·0	0·0		SE by S : S.	9·0
	22	0	173	49·8	47·0	2·8			0·8	0·5	ESE.	ESE.	10·0?
Apr. 4	0	0	158	49·7	47·3	2·4		0·000	1·0	0·0		SE by E.	10·0
	2	0	137	51·2	48·6	2·6			1·2	1·2	SE.	SE by S.	10·0
	4	0	134	50·3	48·0	2·3			1·2	0·2	E.	SE.	10·0
	6	0	129	45·6	44·3	1·3			0·5	0·5	NE.	ESE.	10·0
	8	0	139	44·5	43·3	1·2			0·5	0·5	E.	ESE ?	10·0
	10	0	140	44·7	43·5	1·2			0·5	0·2	NE?		10·0
	18	0	29·220	41·8	41·0	0·8	51·0 41·3		0·8	0·0	WSW.	WNW : NNW.	10·0
	20	0	269	43·2	41·3	1·9			0·0	0·5	WSW.		10·0
	22	0	315	47·5	44·6	2·9			0·5	1·0	NW.	WNW.	9·9
Apr. 5	0	0	361	48·6	44·2	4·4		0·308	2·8	2·0	NW.	NW by W.	10·0
	2	0	426	46·9	43·2	3·7			1·8	0·8	NW by N.	NW by W.	10·0
	4	0	454	49·8	46·3	3·5			0·8	0·8	NNW.	NW by W.	9·5
	6	0	495	48·7	45·0	3·7			0·8	0·0		WNW.	9·0
	8	0	538	44·7	40·6	4·1			0·8	0·0			0·5
	10	0	574	40·6	38·7	1·9			0·0	0·0			0·0
	18	0	29·478	38·1	37·0	1·1	50·4 34·3		0·0	0·0		SW by S.	10·0
	20	0	415	43·8	42·0	1·8			0·2	0·2	S by W.	SW.	9·0
	22	0	361	46·6	44·3	2·3			0·8	0·5	S by W.	SSW.	10·0
Apr. 6	0	0	308	49·3	47·0	2·3		0·008	1·0	0·5	SSW.	SSW.	10·0
	2	0	265	53·0	50·3	2·7			2·5	2·0	SW by W.	SW.	10·0
	4	0	236	53·1	49·4	3·7			2·0	0·8	SW.	SW.	10·0

SPECIES OF CLOUDS, &c.	Observer's Initial.
h. 20. Scud ← cumuli on NE. horizon.	W
22. Cirrous scud ← linear cirri to E. lying N. and S.; clouds very thick to S.	B
0. Large masses of loose cumuli.	B
2. Loose scud: cirrous scud ← linear cirri to W. pointing N. by E.; cumuli to S.	W
4. Scud.	W
6. Id.	W
8. Loose scud, very low ← cirrous scud.	W
10.	B
18. Loose scud.	W
20. Id. ← cirrous haze; cumulo-strati on horizon.	W
22. Patches of scud ← a dense mass of cirro-stratus.	B
0. As before, but more scud.	B
2. Id. id.	B
4. Scud; dense cirro-stratus; raining.	W
6. Loose scud ← loose cumuli to N. and E.	W
8. Id. ← cirrous clouds.	B
10. Light rain.	B
18. Cirro-cumulous scud, the lower portion moving quickly; sky milky.	B
20. Scud: large banks of thick cirrous clouds to W.	B
22. Masses of scud and loose cumuli.	W
0. Id. ← fine woolly cirri to NE. lying WNW. to ESE.; cirrous haze to SW. and S.	W
2. Loose cumuli ← woolly and mottled cirri and fine cirro-cumuli mostly lying WNW. to ESE.	W
4. Masses of loose cumulo-strati: cirrous clouds of all kinds moving slowly.	B
6. Cumulo-strati to NE., patches moving across the zenith ← chiefly linear and woolly cirri.	B
8. Diffuse cirri to W., woolly cirri, patches of cirro-strati to N.	W
10. Cirrous clouds and haze near horizon.	W
18. Masses of scud, moving quickly: thick patches of cirro-cumulous and cirro-stratus clouds stationary; sky [hazy.	B
20. Large detached masses of scud, very low and moving quickly: thick woolly cirri moving slowly; the cirri are of different kinds, lying in strata, in sheets, and becoming haze; the highest probably stationary.	B
22. Masses of loose cumuli to N., cirrous scud ← thick mass of cirrous clouds, stationary.	W
0. Scud ← cirrous haze to E.	W
2. Scud ← thick mass of cirrous clouds; sky nearly covered with cirrous haze.	W
4. As before; light rain.	B
6. Low patches of scud ← thick cirrous clouds, stationary.	B
8. Scud.	W
10. Raining.	W
18. Two currents of scud, the lower detached patches, the upper a thick extended mass; a few drops of rain; it has been raining heavily lately.	B
20. Nearly as before.	B
22. Scud ← cirrous clouds and haze.	W
0. Masses of loose cumuli ← cirrous haze.	W
2. Id. id.; less scud.	W
4. Id. id.; cirrous haze stationary.	B
6. Loose scud ← large woolly cirro-cumuli, stationary; loose cumuli and cirro-strati on horizon.	B
8. Cumuli and cumulo-strati on E. horizon.	W
10. Clear.	W
18. Loose scud ← woolly cirri tinged with red; cumulo-strati to E.	W
20. Scud ← cirro-strati.	B
22. Id. ← thick cirrous clouds; light rain.	W
0. Id.	W
2. Id.	B
4. Id. ← cirrous haze; cumuli on horizon.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0—10.
Apr. 6	6	0	29·203	49·1	46·2	2·9			0·8	0·2		W by S.	10·0
	8	0	176	46·3	44·7	1·6			0·2	0·0			10·0
	10	5	164	45·6	43·0	2·6			0·0	0·0			10·0
	18	0	29·141	41·6	39·8	1·8			0·8	0·0		WSW.	1·0
	20	0	29·121	44·9	43·2	1·7			1·5	0·8	SW by W.	WSW.	7·0
	22	0	29·094	48·3	48·0	0·3	55·1 39·3		1·2	0·5	SW.		10·0
Apr. 7	0	0	29·049	50·2	46·0	4·2		0·000	1·0	0·5	SW by W.	SW by W.	10·0
	2	0	29·003	52·2	48·4	3·8			1·2	0·2	SW.		10·0
	4	0	28·978	49·9	47·5	2·4			0·2	0·0		W by S : W by S.	8·5
	6	0	28·970	50·7	46·0	4·7			1·0	0·5	SW by W.	W by S : W by S.	9·0
	8	0	28·976	44·8	43·6	1·2			0·5	0·0		WSW.	2·5
	10	0	28·979	40·6	39·2	1·4			0·0	0·0			0·1
	18	0	28·988	37·3	36·3	1·0			0·0	0·0		W by N.	5·0
	20	0	28·977	41·2	40·5	0·7			0·2	0·0		WSW.	10·0
	22	0	28·980	47·0	44·3	2·7	52·3 35·5		0·0	0·0		WSW.	10·0
Apr. 8	0	0	29·010	46·0	43·7	2·3		0·144	0·2	0·2	NNE.	N by E.	10·0
	2	0	29·063	48·1	44·0	4·1			1·2	0·8	NNE.	N by E.	6·0
	4	0	29·165	44·5	42·0	2·5			2·0	0·8	NNE.	N by E.	10·0
	6	0	29·268	40·7	39·6	1·1			2·2	2·2	NE.		10·0
	8	0	29·350	40·4	37·6	2·8			2·2	0·8	NNE.	N by E.	9·9
	10	0	29·411	37·7	34·6	3·1			1·0	0·0		NW ?	6·0
Apr. 9	0	0	...	...	...	...	48·3 34·3		0·5				
	18	0	29·650	29·6	27·4	2·2			1·0	0·0		NNW ?	6·5
	20	0	662	33·7	30·6	3·1			0·0	0·0			9·5
	22	0	666	38·7	33·0	5·7	43·9 28·3		1·0	1·0	NW by N.	NW by N.	10·0
Apr. 10	0	0	676	39·4	33·4	6·0		0·010	1·5	1·0	NW.	NW by N.	6·0
	2	0	666	39·8	34·6	5·2			1·5	0·2	WNW.	NW by N : WNW ?	7·0
	4	0	662	39·3	32·6	6·7			2·5	0·8	NW by N.	N by W.	6·0
	6	0	688	35·6	32·7	2·9			2·8	0·5	N.	N by W.	9·5
	8	0	712	34·5	31·6	2·9			0·5	0·2			2·0
	10	0	729	33·3	29·8	3·5			0·5	0·5	NW by N.		0·5
	18	0	29·731	29·0	26·4	2·6			1·2	1·0	NW.		0·2
	20	0	740	34·0	30·0	4·0			1·2	1·2	NW.		0·5
	22	0	774	36·0	32·8	3·2	42·0 27·2		2·0	0·8	NNW.	N : N.	8·0
Apr. 11	0	0	787	39·0	34·1	4·9		0·002	1·7	1·0	N by W.	N.	8·0
	2	0	778	41·1	34·8	6·3			1·0	0·5	NNW.	N by W : NW by W.	6·0
	4	0	784	39·0	34·6	4·4			3·2	0·2	NW by N ?	WNW.	8·0
	6	0	776	36·7	33·3	3·4			0·8	0·0		NW by W.	8·0
	8	0	771	34·0	30·0	4·0			1·8	0·0			1·5
	10	0	780	31·8	29·7	2·1			0·0	0·0		NNW.	8·0
	18	0	29·751	27·0	26·0	1·0			0·0	0·0		NNW.	9·5
	20	0	745	31·3	29·4	1·9			0·2	0·2	WNW.		3·0
	22	0	722	36·4	32·2	4·2	44·3 23·8		0·8	0·8	W by S.	WNW.	9·5
Apr. 12	0	0	670	39·9	34·4	5·5		0·000	1·2	0·8	W by S.	WNW.	9·9
	2	0	584	45·2	39·3	5·9			3·0	3·0	W.	WNW.	9·8
	4	0	496	44·4	38·2	6·2			5·0	3·0	W.	W by N.	10·0
	6	0	450	37·2	36·4	0·8			5·5	3·8	WNW.		10·0
	8	0	512	33·0	32·3	0·7			3·0	1·5	N.		10·0
	10	0	557	33·5	31·0	2·5			2·2	0·8	N by W.	N.	7·5
	18	0	29·663	32·6	31·4	1·2			2·5	0·5	N by W.	N by E.	3·5

Species of Clouds, &c.	Observer's Initial.
h. 6. Thick and ragged masses of scud ⟵ cirrous haze, &c.	B
8. Loose scud; thick mass of cirrous clouds; red to W.; a few drops of rain.	W
10. Scud.	W
18. A long mass of scud on S. and SE. horizon, moving slowly.	B
20. Masses of scud and loose cumulo-strati ⟵ linear, woolly and reticulated cirri, with cirro-strati.	B
22. Scud.	W
0. Scud ⟵ woolly cirri to W.	W
2. Homogeneous scud; light rain.	W
4. Scud: woolly cirri.	B
6. Id.: id.	B
8. Scud.	W
10. Clear; small patches of scud to N. and E.	W
18. Sheets of woolly cirri.	B
20. Scud; light rain.	B
22. Id.	W
0. Id.; raining.	W
2. Woolly cirrous scud, moving slowly ⟵ loose cumuli to W. and S.; small detached cumuli to N. and E.; woolly cirri to W.	W
4. Large masses of scud.	B
6. Rain.	W
8. Scud ⟵ cirrous clouds to N.	W
10. Cirro-cumulous scud; about 10^{m} ago it was acted on by various currents.	W
18. Patches of cumuli ⟵ cumulo-strati on E. horizon; woolly cirri and cirrous haze over the sky.	W
20. Patches of scud; cumuli on E. horizon; cirrous haze covers the sky.	W
22. Scud ⟵ thick cirrous haze.	B
0. Loose-edged cumuli.	B
2. Large masses of black scud, cumuli and nimbi, falling in snow all round: cirrous clouds.	B
4. Loose-edged cumuli; snow falling to N.	W
6. Scud ⟵ large masses of cumuli to E. and S.; a shower of snow.	W
8. Cumuli and cumulo-strati on horizon, falling in showers of snow (?) to SW.	B
10. Cumuli to SE.	B
18. Clear, except a bank of cirro-stratus and loose cumuli to E.	W
20. Cumulo-strati on N. and E. horizon.	W
22. Scud, moving quickly: woolly cirri, slowly.	B
0. Cumuli.	B
2. Scud: cumuli.	B
4. Scud and loose cumuli ⟵ large masses of cumuli to E.	W
6. Cirrous scud ⟵ large ranges of cumuli to N. and E.; passing showers of snow.	W
8. Thick cumuli to NW. and on S. horizon; cirro-strati to S.	B
10. Scud.	B
18. Cirrous scud ⟵ cumulo-strati on E. horizon.	W
20. Patches of cirrous scud; id.; fine linear cirri lying E. by N. to W. by S.; cirrous haze to NE.	W
22. Scud to W. and NW. ⟵ a long line of patches of cirrous-edged cumuli to SSE., feathered and assuming a considerable likeness to the cymoid cirri; sky nearly covered with thick cirrous haze.	B
0. Patches of scud ⟵ cirrous haze.	B
2. As before, but more scud.	B
4. Detached masses of scud ⟵ dense mass of cirrous clouds and haze.	W
6. Rain.	W
8. Several heavy showers of snow since last observation.	W
10. Masses of scud.	B
18. Scud ⟵ loose ragged cumuli on horizon.	W

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers. Dry.	Thermometers. Wet.	Thermometers. Diff.	Thermometers. Max. and Min.	Rain Gauge.	Anemometer. Pressure. Max.	Anemometer. Pressure. Pres.	Anemometer. Direction of Wind.	Clouds moving from	Quantity of Clouds.
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Apr. 12	20	0	29·699	34·0	32·0	2·0	46·3		1·5	1·0	N by W.	N by E.	7·0
	22	0	742	36·1	32·2	3·9	28·8		2·0	0·8	NNW.	N : N by E.	3·5
Apr. 13	0	0	758	39·9	34·9	5·0		0·114	1·8	1·2	N.	N by W : N.	5·5
	2	0	763	40·0	34·1	5·9			1·5	0·5	N by W ?	NNW.	8·5
	4	0	745	40·1	34·7	5·4			0·5	0·2	NW by N ?	WNW.	10·0
	6	0	719	38·5	32·8	5·7			0·2	0·0		WNW ?	10·0
	8	0	697	35·9	33·2	2·7			0·5	0·0	W.	W.	10·0
	10	0	657	35·0	32·8	2·2			0·5	0·2	W by S ?		10·0
	18	0	29·323	47·0	44·6	2·4			3·5	2·5	WSW.	W.	9·9
	20	0	332	48·1	45·8	2·3	39·6		2·5	1·5	W by S.	W by N : NW.	10·0
	22	0	341	51·5	47·7	3·8	33·3		4·0	3·5	W by S.	WNW.	9·7
Apr. 14	0	0	383	56·0	50·5	5·5		0·053	3·2	3·8	W by S.		9·5
	2	0	444	55·9	48·3	7·6			3·8	2·0	W by S.	WNW : WNW.	8·0
	4	0	489	57·6	49·6	8·0			2·2	1·2	NW by W.	NW by N.	7·5
	6	0	537	53·0	48·0	5·0			1·2	1·2	W by N.	NW.	9·7
	8	0	591	50·1	46·8	3·3			1·5	0·0		NW : WNW.	10·0
	10	0	625	49·8	47·0	2·8			2·0	0·8	W by S.		10·0
	18	0	29·725	46·8	44·6	2·2			1·2	0·2	SW by W ?	W.	10·0
	20	0	743	48·4	45·8	2·6	57·3		0·5	0·5	SW by S.	W.	9·0
	22	0	756	51·4	47·9	3·5	45·6		0·8	0·8	WSW.	WSW ?	9·0
Apr. 15	0	0	778	53·0	49·2	3·8		0·000	2·0	2·0	SW by W.	WSW : W by N.	7·0
	2	0	776	53·0	49·0	4·0			1·2	1·5	SW.	WSW.	9·9
	4	0	768	52·9	47·3	5·6			1·2	0·8	SW.	WSW.	8·0
	6	0	760	49·0	45·0	4·0			1·0	0·8	SW.	WSW.	9·9
	8	0	764	46·4	43·5	2·9			0·8	0·5		WSW.	9·5
	10	0	759	45·0	43·0	2·0			0·5	0·0			10·0
Apr. 16	0	0	...	...	...	...	55·4 43·7		0·8				
	18	0	29·738	42·7	42·0	0·7			0·5	0·0		W ?	10·0
	20	0	749	50·2	48·0	2·2	57·3		0·0	0·0			7·0
	22	0	781	54·8	50·1	4·7	41·6		0·0	0·0		S ? : SSE.	9·9
Apr. 17	0	0	785	58·7	52·0	6·7		0·000	0·0	0·0		SSE.	9·9
	2	0	783	58·0	50·5	7·5			0·0	0·0		SE.	9·7
	4	0	786	60·1	52·7	7·4			0·0	0·0		S.	9·0
	6	0	787	56·8	49·1	7·7			0·0	0·0			1·8
	8	0	804	48·5	46·2	2·3			0·2	0·0		SSW.	3·0
	10	0	822	47·0	45·0	2·0			0·0	0·0		SSW.	3·5
	18	0	29·826	40·0	39·3	0·7			0·0	0·0		SW by W.	8·0
	20	0	824	44·8	42·9	1·9	62·6		0·0	0·0		WSW.	10·0
	22	0	814	55·0	50·6	4·4	39·6		0·2	0·0		SSW.	10·0
Apr. 18	0	0	813	54·3	48·0	6·3		0·000	1·2	1·2	SW by W.	SSW.	10·0
	2	0	782	55·3	50·0	5·3			2·0	1·0	SW.	SW by S.	8·5
	4	0	769	52·0	48·3	3·7			2·0	0·8	WSW.	SW by S.	10·0
	6	0	761	51·0	48·6	2·4			1·5	0·5	SW.	SW by S.	10·0
	8	0	747	50·8	48·6	2·2			0·8	0·2	WSW.	SW by W.	9·7
	10	0	753	49·5	47·5	2·0			1·5	1·2	SW.		6·0
	18	0	29·719	47·8	47·1	0·7			1·0	0·2	SW.	SW.	9·5
	20	0	720	51·1	47·8	3·3	58·4		1·0	0·5	SW.	SW : SW.	9·0
	22	0	721	57·2	52·4	4·8	46·7		0·8	0·0		SW.	9·7
Apr. 19	0	0	703	60·8	54·0	6·8		0·000	0·5	0·5	SW.	NW : S by W.	8·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
20.	Cirrous scud ← thick scud to E.; cirrous clouds to W.; occasional showers of snow.	W
22.	Two currents of cirrous scud.	B
0.	Id.	B
2.	Loose-edged cumuli ← linear and curled cirri radiating from N.; sky to W., covered with cirrous haze.	B
4.	Loose cumuli.	W
6.	Masses of cirrous scud ← thick cirrous haze over the sky; half of a solar halo seen, radius about 23°; the space within the halo is much darker than without it, being dark gray; the edge of the halo is brownish and passes into the bluish-white of the cirrous haze without.	W
8.	Scud ← cirrous haze over the sky.	B
10.	Dense cirro-stratus; a few drops of rain.	B
18.	Scud ← cirro-strati to NE. lying SSE. to NNW.	W
20.	Loose scud, quickly: thick cirrous clouds and haze covering all the sky ← cumulo-strati on NE. horizon.	W
22.	Detached masses of scud on horizon ← thick linear cirri over the sky, generally becoming haze, radiating from NW.; cirro-cumuli to S.	B
0.	Nearly as before; the cirri radiating more distinctly than before, and from WNW., intersected at right angles near the zenith by fine lines of cirri.	B
2.	Detached masses of cumuli and scud round horizon: long strips of flame-like cirri rising from woolly cirri, pointing from WNW.; sheets of cirri to SW. appear superimposed upon each other.	B
4.	Cirrous clouds; rather large cirro-cumuli lying in rows towards SSE. with sheets of woolly cirri interspersed.	W
6.	Thick cirrous clouds; cirro-cumuli to W.; cirro-strati and linear cirri to E. lying NNW. to SSE.; patches of scud on N. and S. horizon.	W
8.	Scud: cirro-cumuli, in sheets radiating from NW.; the sky very stormy like.	B
10.	Nearly as before.	B
18.	Scud ← masses of loose cumuli on SE. horizon; cirro-strati on E. horizon.	W
20.	Id. ← large woolly cirro-cumuli; cirro-strati and cumulo-strati to E.	W
22.	Thick scud ← cirro-cumuli and sheets of cirri.	B
0.	Scud, moving quickly: cirro-cumuli, woolly cirri, &c., slowly.	B
2.	Scud.	B
4.	Scud ← linear cirri, pointing from WNW.	W
6.	Id.	W
8.	Id. ← cirro-cumuli; clouds red to W.	B
10.	Id.	B
18.	Thick cirro-cumulous scud, the patches of various colours; motion very small.	B
20.	As before.	B
22.	Patches of scud and loose cumuli on horizon: cirro-cumulous scud.	W
0.	Loose cumuli, motion scarcely perceptible.	W
2.	Cirrous scud, moving very slowly ← loose cumuli near horizon.	W
4.	Cumuli and cirrous scud.	B
6.	Cirro-cumulous scud (as throughout the day); masses of cumuli on horizon to SE.	B
8.	Cirro-cumulous scud.	W
10.	Id.	W
18.	Id., lying in strata to N. ← cirrous haze and rippled cirri.	B
20.	Id.	B
22.	Scud ← haze.	W
0.	Detached masses of scud ← patches of cirrous clouds to W.; sky nearly covered with cirrous haze.	W
2.	Scud ← woolly cirri and cirrous haze.	W
4.	Id. ← cirrous clouds and haze.	W
6.	Id. ← cumulo-strati on E. and NE. horizon.	W
8.	Loose scud, very low, moving quickly ← masses of cirrous clouds; cirro-strati to NW.	W
10.	Scud.	W
18.	Scud ← irregular cirro-cumuli.	B
20.	Id., low and moving quickly: large loose cirro-cumuli, slowly ← finer cirro-cumuli and linear cirri.	B
22.	Scud ← cirrous clouds, principally large cirro-cumuli with fine linear and woolly cirri; cumulo-strati to E.	W
0.	Loose-edged cumuli in two currents ← cumulo-strati on horizon; fine linear and woolly cirri and cirrous haze. In a short time the great mass of the scud and cumuli are from W. by S.: sea-gulls flying very high.	W

Göttingen Mean Time of Observation.			BARO-METER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0—10.
Apr. 19	2	0	29·673	61·6	52·4	9·2			0·2	0·0		S by W.	10·0
	4	0	648	61·3	51·3	10·0			0·0	0·0		S by W : ESE.	9·0
	6	0	625	57·7	51·8	5·9			0·2	0·0			8·5
	8	0	626	53·7	50·1	3·6			0·0	0·0		S by W.	8·5
	10	0	623	49·0	46·7	2·3			0·0	0·0			3·0
	18	0	29·557	36·3	36·0	0·3			0·0	0·0		SW.	6·0
	20	0	547	44·0	42·2	1·8			0·0	0·0		S ?	9·5
	22	0	530	53·3	47·0	6·3	64·4 35·6		0·5	0·5	ENE.		9·0
Apr. 20	0	0	509	55·8	49·0	6·8		0·000	0·8	0·2	E by N.	SE by S.	9·9
	2	0	484	55·0	50·0	5·0			0·2	0·2	E by S.	SE by S.	10·0
	4	0	467	52·8	48·1	4·7			0·5	0·0		SW.	10·0
	6	0	468	51·3	47·5	3·8			0·2	0·0		SSW.	9·7
	8	0	482	49·4	46·9	2·5			0·0	0·0		SSW ?	10·0
	10	0	500	50·0	47·7	2·3			0·0	0·0			8·5
	18	0	...	...	...	...			...	...			
	20	0	...	...	...	...			...	...			
	22	0	29·572	54·2	50·9	3·3	57·3 42·7		0·5	0·5	SW.	SW by W.	9·0
Apr. 21	0	0	574	55·7	50·3	5·4		0·000	0·5	0·0		SW.	9·9
	2	0	576	58·0	51·6	6·4			0·5	0·2	SW.	S.	9·9
	4	0	565	57·0	50·0	7·0			0·5	0·5	SW.	S by W.	6·0
	6	0	559	55·4	49·5	5·9			0·5	0·0		SSW ?	9·9
	8	0	561	52·0	49·0	3·0			0·0	0·0		S ?	10·0
	10	0	556	49·1	46·9	2·2			0·0	0·0			10·0
	18	0	29·491	47·7	46·3	1·4			0·2	0·2	SE.		10·0
	20	0	498	48·7	47·4	1·3			0·2	0·2	SE.	S by E.	10·0
	22	0	519	50·2	48·0	2·2	58·3 45·7		0·5	0·0		S by E.	10·0
Apr. 22	0	7	527	50·0	48·8	1·2		0·172	0·0	0·0		S by E.	10·0
	2	0	529	51·0	48·9	2·1			0·0	0·0		SW ? : SE.	10·0
	4	0	548	49·3	47·6	1·7			0·2	0·0		SE ?	10·0
	6	0	573	49·0	47·3	1·7			0·0	0·0		NW by N : SSE.	10·0
	8	0	603	46·8	46·3	0·5			0·0	0·0			10·0
	10	0	621	45·0	43·8	1·2			0·0	0·0			10·0
Apr. 23	0	0	...	...	...	...	52·2 40·9	0·468	0·0				
	18	7	29·816	35·3	34·3	1·0			1·5	...		S by E.	5·0
	20	0	836	39·5	38·2	1·3			0·0	0·0			0·5
	22	0	830	50·0	45·3	4·7	49·4 31·4		0·8	0·8	S by E.	SSE.	2·0
Apr. 24	0	0	813	53·9	47·0	6·9		0·067	1·5	1·0	S.	S by W.	3·5
	2	0	787	56·4	48·6	7·8			2·2	2·0	S.	S by W.	7·0
	4	0	752	55·8	47·9	7·9			2·0	1·0	S by E.	S by W.	8·0
	6	0	740	51·6	46·7	4·9			1·0	0·8	S.	S by W.	10·0
	8	0	727	47·8	44·1	3·7			1·5	0·8	S.	S by W.	10·0
	10	0	684	46·7	43·3	3·4			3·0	1·8	S by E.		10·0
	18	0	29·327	43·0	41·0	2·0			3·8	4·0	S.	S.	10·0
	20	0	263	41·2	40·0	1·2			3·2	3·0	S.	S.	10·0
	22	0	211	40·8	39·2	1·6	57·3 39·9		4·8	2·2	S.	SSW : SW ?	10·0
Apr. 25	0	0	180	44·0	42·4	1·6		0·127	3·0	1·0		SW.	10·0
	2	0	175	50·8	46·4	4·4			1·0	1·5	NW by W.	W : S by E.	8·0
	4	0	177	51·6	46·0	5·6			1·8	1·0	WNW.	NW.	8·5
	6	0	201	50·0	44·0	6·0			1·8	1·2	NW.	NW.	8·0
	8	0	224	45·3	40·8	4·5			1·2	0·2	WSW ?		4·0
	10	0	234	41·4	38·0	3·4			0·8	0·5	WSW.		3·0
	18	0	29·229	37·0	35·0	2·0			0·5	0·0		NNW ?	2·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
2.	Scud and loose cumuli ← cumuli and cumulo-strati on horizon; a few drops of rain.	B
4.	Scud and loose cumuli: cumuli ← hazy on E. horizon.	B
6.	Nearly as before.	B
8.	Scud and loose cumuli; thin fog; sky red to W.	W
10.	Scud.	W
18.	Loose cirro-cumuli and woolly cirri; thick fog.	B
20.	Cirrous clouds, woolly cirri, &c.	B
22.	Sky covered with cirrous clouds and haze; cumulo-strati and cirro-strati.	W
0.	Scud ← cirrous clouds; cumulo-strati to S.; a few drops of rain.	W
2.	Id. ← thick mass of cirrous clouds; ranges of cumulo-strati to SE. and S.	W
4.	Id. ← cirro-stratus to E.; cirrous clouds to NE.	H
6.	Id. ← large cirro-cumuli.	W
8.	Id.	W
10.	Id.	W
18.		
20.		
22.	Id. ← woolly cirri; ranges of cumuli to S. and E.	W
0.	Scud and loose cumuli; sky to E.	W
2.	Id.; id.; cirrous clouds and haze.	W
4.	Loose cumuli ← woolly, mottled and curled cirri and cirrous haze.	W
6.	Cirro-cumulous scud ← cirrous clouds.	W
8.	Id., motion scarcely perceptible ← cirro-strati to NE. lying SSE. to NNW.	W
10.	Scud; dark.	W
18.	Sky very milky; some patches of scud; thick cirrous haze; light rain.	W
20.	Scud; light rain.	W
22.	Id.; id.	B
0.	Id.; id.	B
2.	Id., moving very slowly; a dark mass of scud rising like a curtain from SW.; heavy rain immediately.	W
4.	Cirro-cumulous scud ← loose scud on horizon; a few drops of rain.	W
6.	Patches of scud: scud; light rain.	W
8.	Raining since last observation.	W
10.	Scud.	W
18.	Scud; hoar-frost.	W
20.	Masses of scud to SW.	W
22.	Loose-edged cumuli ← cumulo-strati on horizon.	B
0.	Cumuli and cumulo-strati.	B
2.	Id.	W
4.	Cumuli, scud, &c.	B
6.	Id., id.; a few heavy drops of rain lately from a dark mass of clouds.	W
8.	Scud and loose cumuli ← cirrous haze.	W
10.	Homogeneous.	W
18.	Loose scud, moving quickly ← thick cirrous haze above; light rain.	W
20.	Scud; rain.	W
22.	Two currents of scud ← cirrous haze; light rain.	B
0.	Scud.	B
2.	Scud and loose cumuli: woolly cirri; smart hail shower lately.	B
4.	Id. ← cirrous clouds and haze above.	W
6.	Thin scud ← woolly and curled cirri; cumulo-strati on horizon.	W
8.	Cirrous clouds, principally woolly and diffuse cirri, becoming haze; masses of cumuli to E. in haze; clouds red to WNW.	W
10.	Masses of cirrous clouds, lying NNW. to SSE.; thick cirrous haze to E.	W
18.	Masses of cirrous scud ← woolly cirri; thick mass of cirrous clouds and haze on E. horizon.	W

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Apr. 25	20	0	29·250	39·9	37·0	2·9	51·8 35·7		0·8	0·5	W.	W.	1·3
	22	0	259	44·2	39·2	5·0			0·8	0·2	W.	WNW.	5·5
Apr. 26	0	0	262	47·2	41·6	5·6		0·012	0·5	0·8	W.	WSW.	7·5
	2	0	264	43·8	39·0	4·8			0·5	0·2	W.	SSW.	10·0
	4	0	274	44·0	40·4	3·6			0·2	0·0		SE ?	9·9
	6	0	315	40·8	38·6	2·2			0·8	0·8	NE.	NE by E.	10·0
	8	0	377	40·2	38·2	2·0			0·8	0·0		NNE.	8·8
	10	0	443	37·0	35·5	1·5			0·0	0·0			1·5
	18	0	29·613	34·3	33·3	1·0			0·0	0·0			0·2
	20	0	644	38·0	36·3	1·7	50·1 32·5		0·0	0·0			0·5
	22	0	646	47·0	44·0	3·0			0·0	0·0	SSW.	S.	8·0
Apr. 27	0	0	646	51·1	45·4	5·6		0·015	0·5	0·8	S by E.	S.	9·8
	2	0	615	55·0	48·2	6·8			1·2	1·0		S.	10·0
	4	0	581	54·7	47·3	7·4			2·2	1·1	SSW.	S.	8·5
	6	0	551	53·9	47·0	6·9			1·8	1·3	SSW.	S.	6·0
	8	0	541	48·9	45·0	3·9			1·1	0·6	SSW.	S ?	10·0
	10	0	533	45·9	43·3	2·6			0·9	0·1	S.		10·0
	18	0	29·392	43·8	41·5	2·3			1·8	0·7	S.	SSW.	10·0
	20	0	375	44·8	42·1	2·7	57·2 43·2		1·5	0·7	S by E.	SSW.	10·0
	22	0	368	46·0	43·7	2·3			1·8	0·8	S by E.	S by W.	10·0
Apr. 28	0	0	354	46·8	44·8	2·0		0·104	1·3	0·9	S by E.	S by W.	10·0
	2	0	353	46·8	45·2	1·6			1·3	0·5	SSW.	S by W.	10·0
	4	0	353	44·3	43·4	0·9			0·7	0·0		S by W.	10·0
	6	0	356	44·6	43·1	1·5			0·0	0·0		SSW.	8·5
	8	0	382	42·6	41·7	0·9			0·0	0·0			0·5
	10	0	409	41·6	40·6	1·0			0·0	0·0		W.	1·5
	18	0	29·458	34·6	34·2	0·4			0·2	0·0			9·7
	20	0	488	42·1	41·3	0·8	49·7 33·4		0·0	0·0		W ?	6·5
	22	0	517	48·0	45·9	2·1			0·0	0·0		S by E.	5·5
Apr. 29	0	0	534	51·3	46·8	4·5		0·297	0·1	0·0		E by N.	8·0
	2	0	565	53·2	47·8	5·4			0·5	0·5	NE.	NNE.	9·8
	4	0	579	52·0	46·6	5·4			0·7	0·5	NE by E.		8·0
	6	0	615	47·2	44·8	2·4			0·5	0·5	NE.	NNE : E by S.	10·0
	8	0	676	45·0	44·0	1·0			0·4	0·1	ENE ?		10·0
	10	0	741	44·3	44·0	0·3			0·4	0·0			10·0
Apr. 30	0	0	…	…	…	…	54·0 42·3	0·000	1·0				
	18	0	30·186	34·8	34·4	0·4			1·5	0·0		ENE ?	2·0
	20	0	195	44·0	42·9	1·1	56·1 32·0		0·0	0·0		E.	7·0
	22	0	193	52·9	49·5	3·4			0·1	0·0			2·5
May 1	0	0	200	57·0	50·0	7·0		0·000	0·7	0·7	ENE.	ENE.	3·0
	2	0	193	60·0	50·7	9·3			0·7	0·7	ENE.		1·0
	4	0	174	58·6	50·0	8·6			0·8	0·7	NE by N.		0·3
	6	0	161	56·0	49·0	7·0			0·8	0·5	NE by N.	E ?	4·0
	8	0	173	51·2	47·7	3·5			0·5	0·0			2·0
	10	0	179	45·3	44·2	1·1			0·0	0·0			0·2
	18	0	30·153	36·7	36·0	0·7			0·0	0·0			1·0
	20	0	141	41·8	40·2	1·6			0·0	0·0		ENE ?	5·0
	22	0	128	49·7	45·0	4·7	60·5 35·3		0·0	0·0			3·5
May 2	0	0	091	52·8	47·8	5·0		0·000	0·4	0·4	ENE.		2·0
	2	0	059	52·6	48·7	3·9			0·6	0·5	E by N.	NE ?	3·0

Quantity of Clouds.	Species of Clouds, &c.	Observer's Initial.
0—10	h.	
1·3	20. Patches of cirrous scud ← cirrous clouds and haze on E. horizon; cumuli on S. and SE. horizon.	W
5·5	22. Cirrous-edged cumuli and cumulo-strati.	B
7·5	0. Many cumuli ← nimbi to E. and SE.	F
10·0	2. Scud and loose-edged cumuli; a smart shower of hail lately.	W
9·9	4. Scud ← cumuli near horizon; woolly cirri to SE.; most of the sky covered with a thick milky haze.	W
10·0	6. Scud ← thick cirrous haze; cumuli near horizon; light rain.	W
8·8	8. Id. ← id.; sky to NW.	B
1·5	10. Scud ?	B
0·2	18. Clear; cirro-strati on S. and E. horizon.	W
0·5	20. Cirro-cumulous scud to E. Thermometer in the sun 77°.	W
8·0	22. Loose-edged cumuli.	B
9·8	0. Id.	B
10·0	2. Id.	B
8·5	4. Loose cumuli ← cirrous clouds to W. [on horizon.	W
6·0	6. Scud and loose-edged cumuli ← mottled cirri and cirro-cumuli to W.; cumulo-strati to E. and SE.; haze	W
10·0	8. Cirro-cumulous scud ← cirrous haze; sky stormy-like.	B
10·0	10. Nearly as at 8h, more scud.	B
10·0	18. Scud ← sky covered with a thick milky mass of clouds; a few drops of rain.	W
10·0	20. Id. ← thick cirrous haze above.	W
10·0	22. Id.; light rain.	B
10·0	0. Id.; id.	B
10·0	2. Id.; id.	B
10·0	4. Id.; id.	W
8·5	6. Scud and loose cumuli ← patches of cirri to S.; cirro-strati to NE.	W
0·5	8. Cirro-strati, cirro-cumuli, and mottled cirri.	B
1·5	10. Cirro-cumulous scud, with which the sky was suddenly covered about half an hour ago.	B
9·7	18. Masses of mottled and diffuse cirri and cirro-cumuli; thick mass of cirro-strati and haze near the horizon. A parhelion to the S. of the sun; it is of about the same size, and at the same altitude as the sun, but soon becomes elongated like a portion of a halo; the side nearest the sun is orange and the other greenish-yellow.	W
6·5	20. Patches of scud, moving along N. and S. horizon ← woolly and diffuse cirri and cirrous haze.	W
5·5	22. Many cirro-cumuli to E. ← masses of scud, twisting and moving in all directions; linear cirri to W.; cumuli and cumulo-strati on N. and S. horizon.	B
8·0	0. Scud and cumuli ← linear and reticulated cirri, becoming cirrous haze.	B
9·8	2. Patches of loose cumuli and scud ← sky covered with cirrous haze; the cirri at 1h were cymoid and moved from S.	B
8·0	4. Mottled cirri and cirro-cumuli, cirrous haze; scud moving along E. horizon.	W
10·0	6. Two currents of scud ← cirro-cumuli.	W
10·0	8. A dense mass of cirro-stratus and haze.	B
10·0	10. Scotch mist.	B
2·0	18. Linear and mottled cirri; thick fog; much hoar-frost.	B
7·0	20. Woolly, mottled, woven and curled cirri pointing from E.	B
2·5	22. Woolly and reticulated cirri, linear cirri to E. and N.; masses of fleecy cirrous clouds to W.; cirrous haze near horizon.	W
3·0	0. Thin woolly and striated cirri, lying from ENE. to SSW.; thick cirrous haze to N. and E.	W
1·0	2. Woolly and curled cirri; a band of curled cirri stretching across the sky from E. by N. to W. by S.; cirrous haze on N. and E. horizon.	W
0·3	4. Cirrous haze near horizon; patches of woolly cirri.	W
4·0	6. Cirri, scattered over the sky in all directions.	B
2·0	8. Woolly and reticulated cirri; cirrous haze on horizon.	W
0·2	10. Clear; a streak of cirro-stratus to N.	W
1·0	18. Woolly and woven cirri to ESE.; thick fog rising from the hollows; heavy dew.	B
5·0	20. Long lines of flame-like cirri like long feathers; the flame-like cirri rising from a midrib which points from ESE., the cirri pointing from NNE.	B
3·5	22. Chiefly woolly and striated cirri; sheets of woolly cirri to W. and S., near horizon.	W
2·0	0. Beautiful flame-like cirri.	W
3·0	2. Flame-like cirri, more curled, woolly cirri; scud and haze on E. horizon.	W

Göttingen Mean Time of Observation.				BARO-METER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
May	2	4	0	30·018	52·0	48·0	4·0			0·5	0·4	NE by E.		2·0
		6	0	29·998	47·8	45·6	2·2			0·4	0·4	ENE.		1·5
		8	0	29·979	42·0	41·2	0·8			0·5	0·5	ENE.	NE ?	10·0
		10	0	29·970	40·6	40·0	0·6			0·5	0·0			10·0
		18	0	29·831	40·0	39·4	0·6			0·0	0·0			10·0
		20	0	801	41·2	40·3	0·9			0·0	0·0			10·0
		22	0	774	46·7	44·6	2·1	54·3		0·0	0·0		S by W ? : NE.	6·5
May	3	0	0	728	52·1	48·8	3·3	38·3	0·000	0·0	0·0			0·2
		2	0	694	57·1	51·1	6·0			0·2	0·1	NE.		0·3
		4	0	643	57·1	50·8	6·3			0·5	0·5	NE by N.		0·3
		6	0	607	56·8	51·2	5·6			0·3	0·1	NE.		0·3
		8	0	587	51·0	47·8	3·2			0·2	0·0			0·3
		10	0	570	44·7	43·7	1·0			0·2	0·0			0·3
		18	0	29·475	41·8	40·5	1·3			0·0	0·0			0·5
		20	0	457	48·8	46·3	2·5			0·0	0·0			0·3
		22	0	428	56·2	49·7	6·5	58·3		0·6	0·6	SSW.	S by E.	5·5
May	4	0	0	423	57·7	49·3	8·4	38·5	0·000	0·7	0·5	SW by S.	S.	8·5
		2	0	385	61·6	52·0	9·6			0·8	1·0	SW by S.	S by W.	6·5
		4	0	361	58·8	51·0	7·8			0·7	0·9	S by W.	S by W.	9·9
		6	0	344	54·0	49·3	4·7			0·8	0·0		S.	7·0
		8	0	312	50·1	47·7	2·4			0·4	0·0		S.	10·0
		10	0	280	49·2	47·7	1·5			0·0	0·0			10·0
		18	0	29·270	38·4	37·0	1·4			1·7	1·3	SW by S.	SW.	2·0
		20	0	294	43·0	40·3	2·7			0·6	0·4	SSW.	SSW : SW by S.	3·5
		22	0	294	49·9	45·0	4·9	61·7		2·0	1·1	SSW.	SSW.	6·0
May	5	0	0	291	50·0	44·7	5·3	38·9	0·064	2·5	1·0	S.	SSW.	9·0
		2	0	304	46·7	42·9	3·8			4·8	2·5	S.	SSW.	9·5
		4	0	266	50·8	45·3	5·5			4·3	1·7	SSW.	SSW.	4·0
		6	0	246	51·9	43·2	8·7			4·3	3·8	S.	SSW.	3·0
		8	0	257	45·7	40·3	5·4			3·0	1·1	S by W.	SSW.	5·0
		10	0	236	44·0	39·9	4·1			2·9	1·3	S.	SSW.	4·0
		18	0	29·328	41·0	39·1	1·9			2·8	0·2	SSW.	SSW.	3·5
		20	0	331	45·3	42·0	3·3			0·4	0·4	SSW.	SSW : SSW.	7·5
		22	0	322	46·9	42·7	4·2	53·3		0·6	0·6	SSW.	WSW : S.	7·0
May	6	0	0	314	52·0	46·7	5·3	38·9	0·111	0·3	0·0		WSW.	10·0
		2	0	276	53·8	46·7	7·1			0·0	0·0			10·0
		4	0	244	53·7	47·0	6·7			0·0	0·0		W by N.	10·0
		6	0	246	48·0	44·0	4·0			0·7	0·1	E ?	WNW.	10·0
		8	0	229	45·0	42·0	3·0			0·0	0·0		WNW.	10·0
		10	0	208	43·8	42·2	1·6			0·0	0·0			10·0
May	7	0	0	...	...	...	...	55·5 40·6		0·8				
		18	0	29·517	41·7	41·0	0·7			2·6	0·0		E by S.	10·0
		20	0	541	45·1	43·7	1·4			0·2	0·2	ENE.	ESE.	9·0
		22	0	556	48·2	45·0	3·2	58·0		0·5	0·7	E.	E.	9·7
May	8	0	0	578	49·3	46·0	3·3	40·5	0·294	1·4	1·1	E by S.	E by S.	10·0
		2	0	620	46·7	42·6	4·1			1·6	1·2	E by S.	E by S.	9.9
		4	0	626	48·3	43·3	5·0			1·3	1·4	ENE.	E by S.	9·0
		6	0	545	48·7	44·0	4·7			1·7	1·3	ENE.	E.	8·0
		8	0	665	45·0	42·0	3·0			1·0	0·3	ENE.	ENE.	10·0
		10	0	670	44·0	42·0	2·0			0·2	0·2	NNE ?		10·0
		18	0	29·674	45·3	42·5	2·8			0·7	0·1	NE ?		8·0

Quantity of Clouds.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0—10.	h.	
2·0	4. Flame and mottled cirri to W.; a bank of scud and haze on E. horizon.	W
1·5	6. Flame-like and woolly cirri and cirro-strati to W.; scud and haze on E. horizon.	B
10·0	8. Scud, homogeneous.	W
10·0	10. Id., id.	W
10·0	18. Thick fog.	B
10·0	20. Fog clearing off.	B
6·5	22. Two currents of scud.	W
0·2	0. Patches of loose cumuli on S. horizon; haze on E. horizon.	W
0·3	2. Detached masses of scud and loose cumuli on N. and S. horizon; masses of mottled cirri to W.	W
0·3	4. Cumulo-stratus to S. and a thick sheet of cirro-cumuli to SW.	B
0·3	6. Id. id.	W
0·3	8. Id.; patches of cirri to SSW.	W
0·3	10. Patches of cirrous clouds to W.; haze and clouds on S. and SE. horizon.	W
0·5	18. Very thin cirrous haze, principally on E. horizon.	B
0·3	20. Cirro-strati to E.	W
5·5	22. Cirrous clouds, chiefly cirro-cumuli ← cirrous haze to S. and E.; cumuli on N. horizon.	W
8·5	0. Woolly cirri and cirro-cumuli ← cirrous haze; ranges of cumuli on N. horizon.	W
6·5	2. Scud and loose-edged cumuli ← masses of cirrous clouds and haze.	B
9·9	4. Masses of cumuli in haze; sky stormy-like.	W
7·0	6. Scud and loose cumuli; a few drops of rain.	W
10·0	8. Id.	W
10·0	10. Scud.	W
2·0	18. Masses of scud, moving quickly ← cumulo-strati on NE. horizon. Thunder heard last night and this morning.	B
3·5	20. Thin scud: thicker scud, moving slower; a few drops of rain.	B
6·0	22. Scud and cumuli ← cumulo-strati on horizon.	W
9·0	0. Id. ← id.	W
9·5	2. Scud ← cumuli near horizon; drops of rain.	W
4·0	4. Cumuli, cumulo-strati and nimbi ← cirrous haze to E.; passing showers.	B
3·0	6. Scud, cumuli and cumulo-strati.	B
5·0	8. Scud and loose cumuli ← cirro-strati and cirrous haze.	W
4·0	10. Scud.	W
3·5	18. Strata of scud and linear and woolly cirri.	B
7·5	20. Strata of scud to E.: thick and large masses of woolly cirri, becoming flame-like.	B
7·0	22. Scud and loose cumuli: cirrous clouds, chiefly cirro-cumuli, woolly cirri.	W
10·0	0. Detached masses of scud ← thick cirro-stratus and haze.	W
10·0	2. Id.; id.	W
10·0	4. Scud ← id.	B
10·0	6. Id. ← id.	B
0·0	8. Id. ← id.	W
0·0	10. Light rain.	W
0·0	18. Scud ← dense cirrous clouds; cumuli on horizon; rain till now.	W
9·0	20. Id. ← mottled and reticulated cirri and cirro-cumuli.	W
9·7	22. Scud and loose cumuli, moving quickly ← pyramidal and common cumuli, moving very slowly; sky stormy-like.	B
0·0	0. Scud and loose cumuli.	B
9.9	2. Id.	B
9·0	4. Loose cumuli ← large cirro-cumuli and woolly cirri.	W
8·0	6. Scud and loose cumuli ← cirrous clouds and haze.	W
0·0	8. Scud rising from E. ← thick sheet of cirro-stratus; long blue bank of cirro-stratus to E.	B
0·0	10. Nearly as before; cirri ribbed, ribs lying N. and S.; less even surface of clouds.	B
8·0	18. Cirrous clouds; large cirro-cumuli and mottled cirri; cirrous haze; very thick to W.; cirro-strati to NE.; bank of scud to SE.	W

Göttingen Mean Time of Observation.				Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
May	8	20	0	29·704	48·0	44·8	3·2			1·0	0·7	NE.	NE : E by S.	8·0
		22	0	731	51·4	47·8	3·6	50·1 42·4		0·8	0·6	NE.	NE : E by S.	8·5
May	9	0	0	749	49·5	46·5	3·0		0·002	1·4	1·2	NE ?	NE : 0.	8·0
		2	0	763	51·3	47·5	3·8			1·2	1·0	ENE.	E : NE by E.	7·0
		4	0	782	49·7	46·2	3·5			1·2	0·5	NE.	NE by E.	9·9
		6	0	791	50·0	46·3	3·7			0·7	0·6	NE.	NE ?	0·5
		8	0	823	47·2	45·0	2·2			0·5	0·4	NE.		0·3
		10	0	853	43·8	43·0	0·8			0·4	0·1	NE.	ENE.	7·0
		18	7	29·939	42·8	40·8	2·0			0·2	0·0		NE.	10·0
		20	0	29·961	44·2	41·7	2·5			0·2	0·1	NE by E.	NE.	9·5
		22	0	29·986	48·0	45·0	3·0	51·9 39·7		0·5	0·4	NE by E.	NE.	7·5
May	10	0	0	29·998	48·0	44·3	3·7		0·000	0·6	0·5	NE by E.	E.	6·0
		2	0	30·006	48·4	45·0	3·4			0·7	0·4	NE.	ENE.	5·0
		4	0	30·005	49·1	45·2	3·9			0·7	0·5	NE by E.		0·3
		6	0	30·003	48·1	44·7	3·4			0·9	0·6	NE by E.		0·2
		8	0	30·020	45·6	42·8	2·8			0·6	0·2	NE.		0·2
		10	0	30·035	39·2	38·8	0·4			0·2	0·0			0·0
		18	0	30·035	37·9	37·6	0·3			0·0	0·0			10·0
		20	0	30·032	40·7	40·3	0·4			0·0	0·0			10·0
		22	0	30·017	45·0	43·0	2·0	49·2 36·0		0·0	0·0		NNW.	4·0
May	11	0	0	29·989	50·7	46·2	4·5		0·000	0·0	0·0			0·2
		2	0	29·968	55·8	48·8	7·0			0·1	0·2	ENE.		0·3
		4	0	29·928	59·0	51·0	8·0			0·4	0·4	NNE.	S by W.	2·5
		6	0	29·904	60·0	52·3	7·7			0·7	0·7	SE.	SSW.	3·0
		8	0	29·917	53·8	48·3	5·5			0·8	0·5	S.	SSW.	6·0
		10	0	29·928	45·8	43·9	1·9			0·4	0·0			0·3
		18	0	29·909	41·1	39·6	1·5			0·0	0·0		SW ?	9·9
		20	0	893	48·7	45·7	3·0			0·0	0·0			10·0
		22	0	874	54·0	48·6	5·4	60·9 36·5		0·0	0·0		SSE ?	10·0
May	12	0	0	844	58·0	51·9	6·1		0·000	0·0	0·0		SW by S.	10·0
		2	0	796	57·3	50·7	6·6			0·0	0·0		SSE.	10·0
		4	0	744	55·2	51·0	4·2			0·0	0·0		SSE.	10·0
		6	0	701	56·0	50·5	5·5			0·6	0·5	SE.	S.	10·0
		8	0	686	51·4	50·8	0·6			0·6	0·0			10·0
		10	0	637	50·3	49·3	1·0			0·0	0·0			10·0
		18	0	29·476	51·6	51·1	0·5			0·5	0·0		S by W.	10·0
		20	0	462	53·0	51·5	1·5			0·6	0·2	S.	SSW.	10·0
		22	0	460	54·0	52·3	1·7	59·1 49·5		0·4	0·6	SW by S ?	SW by W.	10·0
May	13	0	0	459	55·8	52·8	3·0		0·154	1·1	0·6	SW.	W by S.	10·0
		2	0	461	56·8	52·8	4·0			1·1	0·8	SW by W.	W by S.	10·0
		4	0	465	55·7	51·5	4·2			1·8	0·9	SW by W.	W by S.	10·0
		6	0	489	51·6	49·7	1·9			2·0	0·9	SW by W.	W.	10·0
		8	0	512	51·5	49·0	2·5			1·2	0·5	WSW.	W.	10·0
		10	0	542	50·7	48·2	2·5			1·3	0·6			10·0
May	14	0	0	...	...	...	...	58·5 46·4		1·2				
		18	0	29·394	47·1	46·0	1·1			0·9	0·4	NE.	E by N.	9·9
		20	0	398	47·9	46·5	1·4			0·6	0·0		E by N.	10·0
		22	0	397	49·1	47·0	2·1	62·8 42·6		0·6	0·4	ENE.	E by N.	10·0
May	15	0	0	399	49·1	47·6	1·5		0·019	0·6	0·2	NE.	E by N.	10·0
		2	0	400	48·2	46·8	1·4			0·6	0·4	NE by E.	E by N.	10·0
		4	0	394	47·9	46·2	1·7			1·0	0·7	E by N.	E by N.	10·0
		6	0	395	47·2	45·0	2·2			0·9	0·7	E by N.	E by N.	10·0

Species of Clouds, &c.	Observer's Initial.
h. 20. Scud : woolly cirri and cirrous haze.	W
22. Id.: id.	B
0. Id.: id., ~~stationary~~.	B
2. Two currents of scud ← linear cirri.	B
4. Scud.	W
6. Masses of scud ← cirrous haze to W. and SW.	W
8. Scud on horizon.	B
10. Scud.	B
18. Id.	W
20. Id.	B
22. Id.	W
0. Id.	W
2. Scud and loose cumuli.	W
4. Patches of scud and loose cumuli on E. and S. horizon.	W
6. Id.; cirrous haze to E.	W
8. Patches of woolly cirri to W.; cirrous haze to E.	W
10. Clear.	B
18. Thick fog.	W
20. Id., clearing off.	W
22. Scud.	B
0. A few patches of scud; haze to E.	W
2. Detached masses of scud and loose cumuli; haze on E. horizon.	W
4. Scud ← haze near horizon.	W
6. Loose-edged cumuli ← haze near horizon.	W
8. Id. ← id.; woolly and mottled cirri over most of the sky.	B
10. Cirrous haze to N.	B
18. Cirro-cumulous scud, moving very slowly ← cirrous haze round horizon.	W
20. Sky covered with cirrous clouds and haze.	W
22. Scud ← cirrous haze.	B
0. Id., cirro-cumulous scud.	B
2. Id. ← thick cirro-stratus and haze.	W
4. Id. ← id.	W
6. Id. ← id.; a few drops of rain.	W
8. Smart showers of rain.	B
10.	B
18. Scud ← thick mass of cirrous clouds above to S.; cirro-strati and cumulo-strati to E. and NE.	W
20. Scud; light rain.	W
22. Id.; id.	B
0. Id.; passing showers.	B
2. Id.; id.	B
4. Id.	W
6. Id.; slight shower.	W
8. Id.	W
10. Id.	B
18. Great masses of thin scud.	B
20. Id.	B
22. Scud.	W
0. Id.	W
2. Id.	W
4. Id.	W
6. Id.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
May 15	8	0	29·407	46·3	44·5	1·8			0·9	0·8	ENE.	E by N.	10·0
	10	0	420	45·6	43·7	1·9			1·2	0·3	NE by E.	E by N.	10·0
	18	0	29·387	45·2	43·8	1·4			0·9	0·8	NE by N.	E by N.	10·0
	20	0	386	46·3	44·2	2·1	49·1 44·3		1·9	1·4	NE.	E by N.	10·0
	22	0	383	45·7	44·4	1·3			2·0	1·2	NE.		10·0
May 16	0	0	382	45·8	45·0	0·8		0·077	2·4	1·6	NE by E.		10·0
	2	0	379	45·8	45·0	0·8			1·7	1·6	NE.		10·0
	4	0	377	45·2	45·0	0·2			2·0	0·7	NE.		10·0
	6	0	372	45·7	45·5	0·2			1·0	0·5	ENE.		10·0
	8	0	409	45·6	45·1	0·5			1·1	0·6	NE by E.		10·0
	10	0	443	44·6	43·9	0·7			1·4	0·6	ENE.		10·0
	18	0	29·522	44·2	43·0	1·2			1·9	1·1	ENE.	ENE : E by N.	10·0
	20	0	554	45·7	43·2	2·5	46·1 41·3		1·8	2·1	ENE.	ENE : E by N.	10·0
	22	0	584	45·2	42·3	2·9			2·5	1·3	NE by E.	ENE.	10·0
May 17	0	0	614	46·0	42·0	4·0		0·189	2·5	0·6	NE by E.	ENE : NE.	9·0
	2	0	636	48·1	42·7	5·4			2·1	1·2	NE by E.	ENE.	9·8
	4	0	655	46·3	42·2	4·1			1·7	0·8	NE by E.	ENE.	10·0
	6	0	687	45·6	41·8	3·8			1·2	0·6	NE by E.	ENE.	10·0
	8	0	714	43·7	41·3	2·4			0·8	0·4	NE by E.	ENE.	10·0
	10	0	740	41·6	39·8	1·8			0·5	0·0		ENE.	10·0
	18	0	29·794	39·9	38·2	1·7			1·2	0·0		ENE.	10·0
	20	0	815	43·0	40·7	2·3	48·1 38·7		0·1	0·0		ENE.	10·0
	22	0	832	46·0	42·8	3·2			1·2	0·0		E by N.	9·2
May 18	0	0	842	47·4	43·6	3·8		0·013	0·9	1·0	ENE.	E by N.	9·8
	2	0	844	48·0	42·8	5·2			0·8	0·6	E by N.	E.	10·0
	4	0	847	48·8	43·6	5·2			0·9	0·6	E by N.	E.	9·9
	6	0	851	46·3	40·8	5·5			1·0	0·5	ENE.	E.	5·0
	8	0	865	45·3	40·4	4·9			0·6	0·2	ENE.	ENE.	1·0
	10	0	867	37·0	36·4	0·6			0·0	0·0		ENE ?	2·0
	18	0	29·869	35·0	34·3	0·7			0·0	0·0		E by N.	5·0
	20	0	882	42·8	40·7	2·1	49·9 30·4		0·0	0·0		E by N.	3·0
	22	0	876	46·8	42·3	4·5			0·4	0·3	SE by S.	E.	7·0
May 19	0	0	865	49·3	42·9	6·4		0·004	1·0	0·8	E by N.	ESE.	9·7
	2	0	858	50·8	43·6	7·2			1·2	0·8	E by N.	ESE.	9·5
	4	0	841	51·2	43·6	7·6			1·3	1·0	E.	SE.	8·0
	6	0	833	48·3	41·7	6·6			1·4	0·6	E.	SE.	5·0
	8	0	830	45·2	41·4	3·8			1·0	0·3	E by N.	SE.	8·0
	10	0	839	43·0	40·3	2·7			0·6	0·3	E by N.	ESE.	9·0
	18	0	29·774	43·3	41·2	2·1			0·4	0·4	E.	ESE.	9·5
	20	0	765	46·0	42·6	3·4	51·4 41·1		1·1	1·0	E by N.	ESE.	10·0
	22	0	764	47·8	44·3	3·5			1·8	1·2	E by N.	SE.	9·7
May 20	0	0	752	51·8	47·3	4·5		0·000	1·6	1·6	E by S.	ESE : SSE.	8·5
	2	0	734	56·2	49·8	6·4			1·5	1·1	E by S.	E by S.	7·0
	4	0	726	53·9	47·3	6·6			1·6	1·5	E.	ESE.	6·0
	6	0	723	50·3	45·7	4·6			1·9	1·2	E by S.	ESE.	7·0
	8	0	722	46·4	43·0	3·4			1·7	1·4	E by N.	E.	6·0
	10	0	709	43·8	41·8	2·0			1·1	0·5	ENE.	E by S.	8·5
May 21	0	0	…	…	…	…	56·9 42·9		1·4	…			
	18	0	29·555	44·6	44·0	0·6			1·7	0·5	NE.		10·0
	20	0	560	45·0	44·6	0·4	47·4 43·5		0·8	0·7	NE by N.	NE by E.	10·0
	22	0	561	44·8	44·2	0·6			0·7	0·6	NE by N.	NE by E.	10·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
8.	Scud.	W
10.	Id.	W
18.	Id.	B
20.	Id.	W
22.	Id.; rain.	W
0.	Id.; light rain.	W
2.	Id.; id.	B
4.	Id.; heavy Scotch mist.	W
6.	Id.; id.	W
8.	Scotch mist.	W
10.	Id.	
18.	Two strata of scud.	B
20.	Id.	W
22.	Scud.	W
0.	Two strata of scud +— woolly and mottled cirri and large cirro-cumuli.	W
2.	Scud and loose cumuli.	W
4.	Id.	W
6.	Id.	W
8.	Id.; shower of rain.	W
10.	Id.	W
18.	Scud +— thick cirrous mass; cirro-strati and cumulo-strati to NE.	W
20.	As before.	W
22.	Scud and loose cumuli.	W
0.	Id.	W
2.	Id.	W
4.	Id.	W
6.	Id. +— cirro-stratus on NE. horizon.	W
8.	Large woolly cirro-cumuli +— mottled cirri and cirro-strati to NE. and E.; masses of cumuli on S. horizon.	W
10.	Dark cirro-cumulous scud to N. +— cirrous clouds on E. and NE. horizon.	W
18.	Cirro-cumulo-stratus +— masses of loose scud; hoar-frost.	W
20.	Large woolly cirro-cumuli +— sheets of mottled and woolly cirri; masses of scud and cumuli.	W
22.	Scud and cumuli +— woolly and mottled cirri.	W
0.	Id.	W
2.	Id. +— cirro-stratus on E. horizon.	W
4.	Scud +— detached masses of cumuli.	W
6.	Id. +— cirro-cumuli; cumuli on horizon.	W
8.	Id. +— id.	W
10.	Id. +— ranges of ragged cumuli on N. horizon.	W
18.	Id. +— cumulo-strati on horizon; cirro-cumuli and cirrous haze.	W
20.	Id. +— cirrous clouds.	W
22.	Id. +— id.	B
0.	Id.: id.	B
2.	Cirrous scud and loose cumuli +— linear cirri and cirrous haze.	B
4.	Cirrous scud +— loose cumuli; cirro-cumuli, cirri and cirrous haze.	W
6.	Id. +— cumuli; masses of mottled and woolly cirri and cirro-cumuli, becoming haze in some places.	W
8.	Scud, very low, and loose cumuli +— a sheet of thick woolly cirri from zenith to W. horizon; cirro-cumuli to N., cirro-strati to S.; all nearly stationary.	B
10.	Scud +— cirrous haze in some places.	B
18.	Thick Scotch mist.	W
20.	Scud; light rain.	W
22.	Id.; rain.	B

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
May 22	0	0	29·553	45·6	45·0	0·6		0·313	0·8	0·5	NE.	NE by E.	10·0
	2	0	545	46·3	45·9	0·4			0·8	0·5	NE.	NE by E.	10·0
	4	0	538	46·8	46·2	0·6			0·6	0·6	NE.	NE.	10·0
	6	0	543	46·3	46·0	0·3			0·5	0·3	NE.		10·0
	8	0	558	45·2	45·0	0·2			0·5	0·2	NE.		10·0
	10	0	570	44·7	44·5	0·2			0·2	0·1	NE.		10·0
	18	0	29·598	45·3	45·2	0·1			0·2	0·0			10·0
	20	0	603	45·6	45·3	0·3			0·6	0·1	NE ?		10·0
	22	0	611	46·5	46·0	0·5	47·1 44·1		0·5	0·2	NE by E.		10·0
May 23	0	0	607	48·2	47·8	0·4		0·039	0·4	0·2	NE.		10·0
	2	0	604	47·9	47·3	0·6			0·9	0·8	NE by E.		10·0
	4	0	602	47·0	46·8	0·2			1·0	0·2	NE.		10·0
	6	0	595	47·0	46·8	0·2			0·4	0·2	NE.		10·0
	8	0	602	47·2	47·0	0·2			0·2	0·1	NE.	ENE.	10·0
	10	0	614	47·0	46·8	0·2			0·2	0·2	NE by N.		10·0
	18	0	29·595	46·3	46·0	0·3			0·7	0·2	ENE.		10·0
	20	0	593	46·7	46·2	0·5			0·7	0·4	NE by E.		10·0
	22	0	583	47·0	46·3	0·7	48·3 45·2		1·2	0·6	ENE.	ENE.	10·0
May 24	0	0	578	47·8	46·8	1·0		0·133	0·6	0·7	NE by E.	ENE.	10·0
	2	0	563	48·2	47·0	1·2			1·1	1·3	ENE.	ENE.	10·0
	4	0	531	47·9	45·1	2·8			1·6	1·3	NE.	ENE.	10·0
	6	10	502	47·3	44·7	2·6			2·0	1·9	NE.	E by N.	10·0
	8	0	492	45·3	44·0	1·3			2·8	1·3	NE.	ENE.	10·0
	10	0	473	44·6	44·2	0·4			1·5	0·6	NE.	ENE.	10·0
	18	0	29·320	45·7	45·5	0·2			1·6	0·0			10·0
	20	0	298	47·3	47·1	0·2			0·0	0·0			10·0
	22	0	292	49·3	49·0	0·3	50·2 43·8		0·0	0·0		SW by W.	10·0
May 25	0	0	277	51·0	50·0	1·0		0·390	0·3	0·6	SW.	SW by W.	10·0
	2	0	284	51·3	50·0	1·3			0·8	0·7	SW by S.	SW by W.	10·0
	4	0	287	50·7	49·9	0·8			1·0	0·2	SW by S.	SW by W.	10·0
	6	0	301	51·3	49·7	1·6			0·4	0·5	SW by S.	SW by W.	9·7
	8	0	317	50·7	48·3	2·4			0·7	0·4	SW by S.	SW.	9·0
	10	0	336	48·3	46·3	2·0			0·2	0·1	SW by S.		7·5
	18	0	29·287	51·7	49·4	2·3			0·3	0·0			3·0
	20	0	284	54·2	51·2	3·0			1·1	0·4	SW by S.	SSW : SSW ?	9·5
	22	0	270	57·7	53·3	4·4	51·9 41·5		1·0	0·7	SW by S.	S by W : SSW.	6·5
May 26	0	0	254	57·6	53·6	4·0		0·149	1·6	0·6	SW by S.	S by W.	9·5
	2	0	233	56·2	52·6	3·6			1·3	0·8	SSW.	S by W.	10·0
	4	0	209	57·0	53·0	4·0			0·8	0·8	SW.	SW.	9·5
	6	0	200	54·2	50·1	4·1			1·6	1·3	SW.	SSW.	9·5
	8	0	195	50·9	48·0	2·9			1·2	0·4	SW.		10·0
	10	0	181	49·8	47·3	2·5			0·7	0·3	SW.	WSW.	10·0
	18	0	29·150	47·3	46·5	0·8			0·2	0·0		W.	10·0
	20	0	151	50·0	47·6	2·4			0·4	0·3	WSW.	W.	10·0
	22	0	148	50·8	47·7	3·1	60·7 46·6		0·2	0·0		W.	10·0
May 27	0	0	146	54·7	49·7	5·0		0·064	0·4	0·1	WSW.	WSW.	10·0
	2	0	138	53·0	49·3	3·7			0·7	0·2	SW.	WSW.	10·0
	4	0	121	54·2	53·1	1·1			0·6	0·0		W by S.	10·0
	6	0	108	54·2	50·1	4·1			0·5	0·2	SW by W.	W by S.	10·0
	8	0	117	51·0	49·3	1·7			0·3	0·0		W by S.	10·0
	10	0	141	49·0	47·9	1·1			0·0	0·0			10·0
May 28	0	0	...	...	...	...	56·9 42·9		3·0				

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	Scud; rain.	B
2.	Id.; id.	B
4.	Id.; id.	W
6.	Scotch mist.	W
8.	Id.	W
10.	Id.	W
18.	Thick Scotch mist.	W
20.	Id.	W
22.	Homogeneous scud; light drizzle.	B
0.	Id.; id.	B
2.	Id.; id.	B
4.	Id.; rain.	W
6.	Scotch mist.	W
8.	Scud; Scotch mist; very thick to N. and W.; clearing to E. and SE.	B
10.	Scotch mist.	B
18.	Homogeneous scud; mist.	W
20.	Id.; id.	W
22.	Scud, breaking; mist.	B
0.	Id.; rain.	B
2.	Id.; mist.	B
4.	Id. ← cirrous clouds and haze.	W
6.	Id. ← id.	W
8.	Loose scud; light rain.	W
10	Id; id.	W
18.	Rain.	W
20.	Id.	W
22.	Thin scud, falling in rain ← dense watery-like cirro-stratus.	B
0.	Id., id. ← id.	B
2.	Id., id. ← id.	B
4.	Id., id. ← id.; breaking to S.	W
6.	Id., ← dense cirro-stratus and haze; sky to SE.	W
8.	Chiefly woolly cirri and cirrous haze ← scud to NW.; cirro-strati on E. horizon; sky to E.	B
10.	Nearly as before; strips of feathered cirri pointing from SW. to NE.	B
18.	Masses of scud and cumuli to SW.; cumulo-strati on S. horizon.	W
20.	Scud: cirrous scud ← cirro-strati and cumuli to S. and E.	W
22.	Loose-edged cumuli: cirrous clouds, moving slower ← cumulo-strati on horizon.	B
0.	Loose cumuli ← cirrous clouds; a shower lately; rain to SW.	B
2.	Id. ← id.; slight shower.	B
4.	Scud and loose-edged cumuli ← cirro-cumulous clouds, stationary.	W
6.	Scud and loose cumuli ← masses of cirrous clouds above.	W
8.	Sky covered with a sort of grey cirrous mass, falling in a slight shower; scud on horizon.	B
10.	Cirro-cumulous scud.	B
18.	Scud ← cirro-strati all round; light drizzle.	D
20.	Id. ← cirro-strati on S. and E. horizon.	W
22.	Id. ← id. NE. horizon.	W
0.	Id.	B
2.	Id.	H
4.	Id.; a few drops of rain.	B
6.	Id. ← cirrous clouds and haze to E.	D
8.	Id.	W
10.	Light rain.	W

Göttingen Mean Time of Observation.				BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			1–10.
May	28	18	0	29·679	37·1	37·0	0·1			2·2	0·0		SW : W by N.	9·0
		20	0	693	40·1	39·0	1·1	49·2		0·0	0·0		SSW.	5·5
		22	0	704	44·6	41·2	3·4	34·0		0·4	0·2	WSW.	W.	3·5
May	29	0	0	687	51·4	45·0	6·4		0·403	0·4	0·2	W by S.	W.	7·0
		2	0	689	47·7	43·2	4·5			2·0	0·6	WNW.	W.	9·5
		4	0	702	43·0	42·0	1·0			1·8	1·1	WSW.	W.	9·7
		6	0	712	48·8	44·8	4·0			1·4	0·6	SW by W.	NW : W.	9·0
		8	0	744	47·4	44·0	3·4			0·8	0·1	NE.	NW by N.	5·0
		10	0	779	41·9	39·4	2·5			0·0	0·0		WNW.	6·5
		18	0	29·801	42·8	41·3	1·5			0·0	0·0		W.	9·0
		20	0	810	45·2	43·2	2·0	52·3		0·0	0·0		W.	9·0
		22	0	816	50·6	46·7	3·9	36·1		0·1	0·0		W.	9·7
May	30	0	0	803	52·2	47·1	5·1		0·137	0·0	0·0		W.	9·5
		2	0	774	56·7	49·0	7·7			0·0	0·0		W.	9·3
		4	0	772	51·0	48·0	3·0			0·7	0·0		Various.	10·0
		6	0	767	46·3	45·0	1·3			0·5	0·2	NE.	Various : W by S.	10·0
		8	0	739	48·0	46·0	2·0			0·2	0·0		W ? : W by S.	10·0
		10	0	728	45·8	43·9	1·9			0·3	0·1	ESE.	ESE.	10·0
		18	0	29·560	43·3	43·0	0·3			0·9	0·5	NE by N.	ENE.	10·0
		20	0	555	43·8	43·2	0·6	58·5		0·7	0·4	NE by N.	ENE.	10·0
		22	0	535	44·6	43·9	0·7	42·3		0·6	0·5	NE.		10·0
May	31	0	0	528	46·8	46·2	0·6		0·277	0·6	0·3	NE by N.		10·0
		2	0	518	{47·9	47·1	0·8			0·3	0·2	NE by N.	ENE.	10·0
		4	0	516	48·3	47·7	0·6			0·2	0·1	NE.	ENE.	10·0
		6	0	513	47·8	47·0	0·8			0·1	0·0		NE.	10·0
		8	0	515	47·0	46·7	0·3			0·0	0·0		NE.	10·0
		10	0	510	46·0	45·7	0·3			0·1	0·0		NE.	10·0
		18	0	29·429	44·8	44·7	0·1			0·4	0·2	NE.	ENE.	10·0
		20	0	417	46·8	46·1	0·7	48·4		0·2	0·2	NE.	ENE.	10·0
		22	0	396	48·6	47·7	0·9	42·9		0·9	0·6	NE.	ENE.	10·0
June	1	0	0	381	48·0	47·0	1·0		0·405	0·7	0·4	ENE.	ENE.	10·0
		2	0	346	48·6	47·7	0·9			0·7	0·5	NE by E.	ENE.	10·0
		4	0	295	48·4	47·7	0·7			0·6	0·5	ENE.	ENE.	10·0
		6	0	238	48·8	48·1	0·7			0·7	0·2	NE.	ENE.	10·0
		8	0	209	48·3	47·9	0·4			0·3	0·0		ENE.	10·0
		10	0	185	47·8	47·4	0·4			0·0	0·0		ENE.	10·0
		18	0	29·110	48·8	48·2	0·6			0·0	0·0		S by W.	10·0
		20	0	29·094	53·8	53·0	0·8	48·6		0·0	0·1	S.	SSW.	10·0
		22	0	29·092	57·1	55·0	2·1	46·6		0·5	0·1	SSW.	SSW.	10·0
June	2	0	0	29·084	57·9	55·6	2·3		0·121	0·3	0·0		SSW.	10·0
		2	0	29·057	53·7	51·9	1·8			0·9	0·9	NE by E.	NE.	10·0
		4	0	29·032	49·8	48·7	1·1			0·8	0·7	NE by N.		10·0
		6	0	28·983	49·0	48·2	0·8			0·9	0·5	NE by N.		10·0
		8	0	28·976	46·6	46·4	0·2			1·0	0·5	NNE.	NNE.	10·0
		10	0	28·970	46·2	46·0	0·2			0·8	0·6	NE by N.	NNE.	10·0
		18	0	28·994	45·8	44·5	1·3			1·6	0·5	N ½ E.	N.	9·9
		20	0	29·046	46·2	44·2	2·0	66·1		1·6	0·6	N by E.	N by E.	10·0
		22	0	29·118	46·8	43·6	3·2	44·5		0·9	0·6	N by E.	NNE.	10·0
June	3	0	0	29·175	47·5	44·0	3·5		0·420	1·1	0·4	NNE.	NNE.	10·0
		2	0	29·234	46·5	43·9	2·6			1·1	0·4	NE by N.	NNE.	10·0
		4	0	29·277	45·2	43·1	2·1			1·1	0·6	NE by N.	NNE.	10·0

May 31^{d} 7^{h}. New silk put upon the wet bulb thermometer.

June 2^{d} 22^{h}. The maximum temperature given is rather doubtful. The maximum at one time was observed to be 61°·5. If 66°·1 is an accurate indicate, the leap must have been sudden.

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
18.	Patches of scud moving quickly: scud ← linear cirri; line of scud creeping along N. horizon. Snow seen on some of the surrounding hills, and lying on the ground an hour ago.	B
20.	Scud and loose cumuli.	B
22.	Id.	W
0.	Id.	W
2.	Id.; passing showers.	W
4.	Scud; raining, heavy shower of hail lately; sky to N.	W
6.	Low masses of scud and cumuli: cirrous haze and cirro-cumuli ← long ranges of cumuli and nimbi, of great height, to E.; raining heavily to E. and S.; sky electric looking.	B
8.	Scud ← ranges of cumulo-strati to N.; patches of mottled cirri.	W
10.	Loose cumuli ← cirrous clouds.	W
18.	Thick cirro-cumulous scud; sky to N.	B
20.	Id., more dense ← scud and cumuli on N. horizon; sky getting more to NE.	B
22.	Scud and loose cumuli ← cirrous clouds to NE.	W
0.	Id. ← thin cirri to E.	W
2.	Id. ← linear cirri to NE., lying WNW. to ESE.; raining heavily to S. At $2^h\ 27^m$ black, loose, ragged scud began to move from N., W., and E., and the wind began to blow 0·7 lb. from SSW.	W
4.	Scud moving from various directions, chiefly from SW. by S., and also from N. by E.; rain.	B
6.	Patches of scud moving from E., NE., and W.: cirro-cumulous scud ← cumulo-strati to S.; rain.	B
8.	Patches of scud: cirro-cumulous scud ← thick cirrous haze; solar halo.	W
10.	Scud; light rain.	W
18.	Id.; rain.	B
20.	Id.; heavy rain.	B
22.	Homogeneous; light drizzle.	W
0.	Id.; id.	W
2.	Scud; light rain.	W
4.	Id.; id.	B
6.	Id.; id.	W
8.	Id.; id.	W
10.	Id.; id.	W
18.	Id.; id.	B
20.	Id.; id.	B
22.	Id.; id.	W
0.	Id.; id.	W
2.	Id.; id.	W
4.	Id.; id.	B
6.	Id.; id.	W
8.	Id.; id.	W
10.	Id.; id.	W
18.	Scud, nearly homogeneous; light mist; broken a little to E. and ESE.	B
20.	Scud ← cirrous clouds.	B
22.	Id.	W
0.	Id.	W
2.	Homogeneous scud; half an hour ago the clouds were moving from S., the wind changed suddenly to NNE., and a lower stratum of scud sprung up, moving from NE.	W
4.	Homogeneous scud; mist; light rain just commenced.	B
6.	Id.; id.; id.	B
8.	Scud; light rain.	W
10.	Id.; id.	W
18.	Scud ← an opening to NNE. where cirrous clouds are seen.	B
20.	Id.	B
22.	Id. ← cirro-strati on NNE. horizon.	W
0.	Id.	W
2.	Id.; light rain.	W
4.	Id.; id.	B

Göttingen Mean Time of Observation.				BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
June	3	6	0	29·313	44·3	43·2	1·1			1·4	0·3	NE by N.	NNE.	10·0
		8	0	360	43·7	42·6	1·1			1·2	0·5	NE.	NNE.	10·0
		10	0	396	43·9	43·3	0·6			0·9	0·7	NE by N.	NNE.	10·0
June	4	0	0	...	...	...	...	48·0 41·9	0·091	1·2				
		18	0	29·660	43·7	41·8	1·9	48·8 42·7	0·092	1·8	0·5	NE.	NE.	10·0
		20	0	682	43·9	40·8	3·1			1·1	0·6	NE by E.	NE.	10·0
		22	0	690	44·0	40·5	3·5			1·5	0·7	NE.	NE?	10·0
June	5	0	0	693	43·1	41·5	1·6			1·2	0·7	NE.		10·0
		2	0	694	43·4	41·8	1·6			1·2	0·6	NE by N.		10·0
		4	0	687	44·1	41·7	2·4			1·5	0·7	NE.		10·0
		6	0	682	42·6	41·3	1·3			0·8	0·8	NE by N.		10·0
		8	0	695	42·2	41·6	0·6			0·9	0·2	NE by N.		10·0
		10	0	691	42·1	41·3	0·8			0·5	0·4	NNE.	NNE.	10·0
		18	0	29·688	43·7	43·0	0·7	43·9 41·3	0·170	0·6	0·0			10·0
		20	0	700	46·6	45·0	1·6			0·4	0·3	NNE.	NNE.	10·0
		22	0	711	48·0	46·4	1·6			0·5	0·4	NNE.	NNE.	10·0
June	6	0	0	711	49·2	47·3	1·9			0·4	0·2	NE by N.	NNE.	10·0
		2	0	714	49·5	47·0	2·5			0·6	0·2	N.	N by E.	10·0
		4	0	706	52·4	48·9	3·5			0·2	0·0		N by W.	9·9
		6	0	690	51·9	48·6	3·3			0·0	0·0		N by W.	9·9
		8	0	680	51·4	48·5	2·9			0·1	0·1	N by W.	N.	9·9
		10	0	667	48·2	46·4	1·8			0·0	0·0		N.	10·0
		18	0	29·571	47·8	46·0	1·8	52·3 45·5	0·006	0·0	0·0			10·0
		20	0	559	51·4	47·3	4·1			0·0	0·0			10·0
		22	0	534	52·7	46·8	5·9			0·6	0·5	WSW.	W.	9·3
June	7	0	0	502	53·4	47·2	6·2			0·3	0·5		WSW.	5·0
		2	0	457	57·0	51·0	6·0			0·3	0·6	S by W.	WSW.	10·0
		4	0	419	56·2	52·8	3·4			0·6	0·2	SW by S.	SSW.	9·9
		6	0	359	56·3	53·9	2·4			0·3	0·0		SSW.	9·9
		8	0	299	55·4	51·9	3·5			0·4	0·4	S by E.	S.	9·9
		10	0	225	53·3	50·8	2·5			1·1	0·5	SSE.	S by E.	10·0
		18	0	28·912	53·3	50·2	3·1	59·0 49·3	0·168	2·2	1·2	SSE.	S by W.	3·0
		20	0	881	53·8	50·0	3·8			2·6	1·2	S.	S by W.	7·0
		22	0	854	56·3	51·5	4·8			3·6	1·4	S by W.	S.	10·0
June	8	0	0	836	55·0	50·8	4·2			2·8	3·4	SW by S.	S by W.	9·5
		2	0	809	58·0	52·9	5·1			3·4	1·8	S by W.	SSW.	8·0
		4	0	789	58·0	53·0	5·0			3·3	2·4	S by W. v.	S by W.	9·0
		6	0	776	53·6	50·1	3·5			2·8	0·4	S by W.	S by W.	9·8
		8	0	747	54·0	49·2	4·8			2·4	0·7	S by E.	S.	9·9
		10	0	716	52·2	48·7	3·5			2·0	2·8	SSE.	S.	10·0
		18	0	28·618	50·7	49·2	1·5	59·2 49·1	0·118	2·7	0·4	S by E.	S by W.	10·0
		20	0	28·656	53·0	51·9	1·1			0·3	0·0		W.	10·0
		22	0	28·726	56·7	52·0	4·7			0·7	0·5	W by S.	W. by N.	9·7
June	9	0	0	28·804	53·3	48·8	4·5			1·3	1·3	W by S.	W.	9·9
		2	0	28·860	55·2	50·2	5·0			1·9	1·6	W by S. v.	W.	10·0
		4	0	28·915	58·2	51·4	6·8			2·4	1·3	WSW.	W.	9·8
		6	0	28·966	54·6	50·7	3·9			2·9	1·2	WSW. v.	W.	9·8
		8	0	29·019	52·9	49·6	3·3			2·1	0·6	SW by W.	W.	10·0
		10	0	29·078	52·0	48·7	3·3			1·9	1·6	W. v.	W.	10·0
		18	0	29·248	51·2	48·3	2·9	57·0 49·6		1·9	0·8	W.	W : NW.	9·7
		20	0	315	52·7	49·5	3 2			1·0	0·6	W. v.	NW.	9·9
		22	0	370	57·6	51·8	5·8			1·0	1·2	NW by N. v.	W : NW by W : NNW.	4·0

June 7ᵈ. Several swallows found dead, either from the cold or the want of food.
June 9ᵈ. The River Tweed about 5 feet above its mean height.

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
6.	Scud; smart showers.	B
8.	Id.; light rain.	W
10.	Id.	W
18.	Id.; a few drops of rain.	W
20.	Id.	W
22.	Id.; light rain.	B
0.	Id.; id.	B
2.	Id.; rain.	B
4.	Id.	W
6.	Rain.	W
8.	Id.	B
10.	Scud; rain.	B
18.	Homogeneous scud.	W
20.	Scud.	W
22.	Id.; a few drops of rain.	B
0.	Id.; id., occasionally; clouds breaking.	B
2.	Id.	B
4.	Scud and loose cumuli; sky to N.	W
6.	Id.; id. E.	W
8.	Cirro-cumulous scud, moving very slowly ← cumuli on N. horizon; cirro-strati to E.	B
10.	Id. id. id. id.	B
18.	Cirro-cumulo-strati, stationary; cumulo-strati and cirro-strati on E. horizon.	W
20.	Id.	W
22.	Cirro-cumulo-strati, moving slowly ← cirro-strati to N. and E.; black to S.; the wind commenced blowing very lately.	B
0.	Cirrous scud and loose cumuli.	B
2.	Scud.	B
4.	Id.; sky to SSE.	W
6.	Id. ← cirro-strati to E.; a shower of misty rain half an hour ago.	W
8.	Id. ← cumuli to N.; cirro-strati to E.	B
10.	Cirro-cumulo-strati.	B
18.	Scud ← cumuli on E. horizon.	W
20.	Id. ← id. ; a few drops of rain.	W
22.	Id.; light rain.	B
0.	Id. ← cirrous clouds; cumuli on horizon.	B
2.	Id. ← mottled cirri and cirrous haze; heavy showers occasionally.	B
4.	Scud and loose cumuli ← linear and woolly cirri and patches of cirrous haze; heavy showers occasionally.	W
6.	Scud ← cirrous clouds.	W
8.	Id., some of it very low ← cirrous haze.	B
10.	Id.; light rain.	B
18.	Id.; the clouds have a bluish appearance to E.; a few drops of rain.	W
20.	Id.; light rain.	W
22.	Scud and cumulo-strati ← cirrous clouds.	B
0.	Scud; occasional showers; sky to W.	B
2.	Id.; id.	B
4.	Id. ← cirrous clouds; drops of rain.	B
6.	Id. ← id.	W
8.	Id.	W
10.	Id.	B
18.	Patches of loose scud to S.: cirrous scud ← large cirro-cumuli and thick masses of cirro-strati and haze.	W
20.	Dense mass of cirro-stratus ← patches of scud to S.; broken to N.; shower of rain.	W
22.	Scud: scud: cumuli and cirro-strati; currents of the lowest scud varying from N. to W.; cumulo-strati on horizon.	B

Göttingen Mean Time of Observation.			BARO-METER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
June 10	0	0	29·419	57·8	51·6	6·2		0·020	2·1	1·8	NW by N. v.	WNW : NW by W : WNW.	5·0
	2	0	471	54·0	51·9	2·1			3·5	1·3	W. v.	NW by N : NW by N.	7·0
	4	0	504	61·2	53·0	8·2			2·0	1·4	WNW. v.	NW by N.	6·5
	6	0	548	59·2	51·8	7·4			2·2	1·7	NW.	NW by N : NNW.	9·0
	8	0	612	55·6	50·2	5·4			1·7	0·9	NNW.	NNW.	10·0
	10	0	665	52·3	49·0	3·3			0·6	0·0		NNE.	5·0
June 11	0	0	...	...	...	...	62·1 45·5		1·6				
	18	0	29·982	48·5	46·0	2·5			1·7	0·0		NNE.	10·0
	20	0	980	49·2	47·0	2·2	58·4 48·6		0·3	0·2	NE.	NNE.	10·0
	22	0	988	49·3	47·1	2·2			0·4	0·4	NE by N.	NNE.	10·0
June 12	0	0	990	50·2	46·5	3·7		0·078	0·5	0·4	NE by N.	NE by N.	10·0
	2	0	986	51·2	48·3	2·9			0·5	0·4	NE by N.	NE by N.	10·0
	4	0	979	50·6	47·6	3·0			0·5	0·4	NE by N.	NE.	10·0
	6	0	980	48·5	45·8	2·7			0·6	0·3	NE by N.	NE by E.	10·0
	8	0	976	46·1	44·6	1·5			0·7	0·2	NE by N.	NE by E.	10·0
	10	0	985	45·2	44·0	1·2			0·4	0·1	NE by N.	NE by E.	10·0
	18	0	29·969	44·3	43·8	0·5			0·5	0·2	NE by N.	NNE.	10·0
	20	0	970	46·0	44·4	1·6			0·6	0·2	NE by N.	NNE?	10·0
	22	0	970	47·2	45·5	1·7	52·6 43·3		0·5	0·4	NE by N.	NE by N?	10·0
June 13	0	0	949	51·8	48·5	3·3		0·010	0·5	0·6	NE by N.	NNE.	9·5
	2	0	945	51·4	48·7	2·7			1·2	0·7	NE by N.		10·0
	4	0	932	50·4	48·8	1·6			0·8	0·3	NE by N.	NE?	10·0
	6	0	935	49·8	48·2	1·6			0·5	0·2			10·0
	8	0	935	48·0	47·1	0·9			0·4	0·3	NE.		10·0
	10	0	956	47·4	46·7	0·7			0·4	0·0			10·0
	18	0	29·953	49·4	48·3	1·1			0·3	0·0		NE?	10·0
	20	0	956	53·9	51·0	2·9	51·9 43·5		0·4	0·4	NE by E.	ENE.	1·2
	22	0	955	56·9	53·5	3·4			0·7	0·5	NE by N.	ENE.	0·5
June 14	0	0	963	59·3	55·3	4·0		0·005	1·3	1·3	NE.	ENE.	1·2
	2	0	957	59·3	55·6	3·7			1·2	0·7	ENE.	ENE.	2·0
	4	0	956	58·8	54·6	4·2			1·4	0·5	NE by N.		0·3
	6	0	946	58·7	55·0	3·7			0·8	0·5	NE by E.		0·3
	8	0	960	55·8	52·7	3·1			0·6	0·4	NE. v.		0·1
	10	0	991	50·0	49·0	1·0			0·5	0·0			10·0
	18	0	29·985	52·0	49·0	3·0			0·6	0·0		E?	0·5
	20	0	996	55·0	51·0	4·0	60·6 47·1		0·1	0·2	ENE.		0·1
	22	0	991	58·9	54·4	4·5			0·4	0·2	ENE.		0·0
June 15	0	0	982	64·2	57·1	7·1		0·000	0·5	0·6	ENE.	E?	0·2
	2	0	979	64·4	57·7	6·7			0·8	0·6	ENE.		0·1
	4	0	966	64·0	57·1	6·9			0·8	0·5	NE. v.		0·1
	6	0	945	64·8	56·4	8·4			0·6	0·5	NE by E. v.		0·0
	8	0	951	62·3	55·8	6·5			0·5	0·1	NE by E.		0·3
	10	0	967	53·1	49·7	3·4			0·4	0·0			2·0
	18	0	29·939	50·2	49·0	1·2			0·0	0·0		E.	6·0
	20	0	931	57·1	53·1	4·0	65·4 41·5		0·0	0·0			7·0
	22	0	922	62·1	56·0	6·1			0·1	0·1	ENE.		6·0
June 16	0	0	911	65·7	56·0	9·7		0·000	0·6	0·6	NNE. v.		3·0
	2	0	905	60·7	57·0	9·7			1·0	0·7	NE by N.		3·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	Scud: scud: large sheet of cirrous-fringed cloud rising from W. and falling in rain; a few drops here.	B
2.	Scud: cumuli and nimbi; a shower approaching. $1^h 25^m$ a heavy shower of rain, then of hail, followed by lightning and thunder; loud peals distant about 1 mile at an altitude of 45°.	B
4.	Scud and cumuli.	W
6.	Id. to SE.: cirro-cumulous scud ← masses of cirro-cumuli and cirrous clouds.	W
8.	Scud; light rain.	B
10.	Cirrous scud.	B
18.	Scud.	B
20.	Id.	B
22.	Id.	W
0.	Id.	B
2.	Id.	W
4.	Id.	W
6.	Id.	B
8.	Id.; a few drops of rain.	W
10.	Id.	W
18.	Id.; drizzle.	B
20.	Id.	B
22.	Id.	W
0.	Id. ← woolly and mottled cirri.	W
2.	Id.	W
4.	Id.	B
6.	Id.; light mist.	B
8.	Id.	W
10.	Id.	W
18.	Thin low floating scud; mist.	B
20.	Strings of scud; cirro-strati to S.	B
22.	Patches of scud moving quickly and becoming dispersed; cirri.	W
0.	Patches of scud ← masses of woolly cirri and cirro-cumuli to S. and W.	W
2.	Masses of scud near horizon.	W
4.	Id.	B
6.	Id.	B
8.	Id.	B
10.	Homogeneous scud.	W
18.	Scud on E. and S. horizon.	B
20.	Id.	B
22.	Clear.	W
0.	Id.; a few small patches of scud to S.	W
2.	Id.; id.	W
4.	One or two specks of scud to SE. and S.	B
6.	Not a speck of cloud to be seen.	B
8.	Cirrous haze and cirro-strati forming to NE.	W
10.	Woolly cirri, cirro-cumuli, cirro-strati, and cirrous haze to N. and NE. all tinged with red.	W
18.	Cirrous haze and long feathers of woolly cirri pointing from NE., linear cirri pointing from E., moving slowly. Beautiful solar halo, incomplete near the horizon, with parhelia; the parhelia are elongated from the sun; at the vertex of the arch there is also a large bright mass 3° or 4° broad; the halo has a reddish-brown colour, and the parhelia are like suns seen through a thick haze. $18^h 4^m$. The parhelia to the south and at the vertex of the halo are in a thickish woolly cirrus, the parhelion to the north is in a homogeneous mass of haze or compact linear cirri.	B
20.	Cirrous haze and linear cirri—no halo.	B
22.	Id. id. Distinct solar halo; brightest and of a brownish-red colour at the east and west points, less distinct and white at the north and south points.	W
0.	As before. The halo still visible but faint.	W
2.	Mottled and woolly cirri to SW. lying WNW. to ESE.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0—10.
June 16	4	0	29·894	65·1	56·0	9·1			0·7	0·7	NE.	E.	5·0
	6	0	894	63·8	53·0	10·8			0·6	0·3	NE by N.		4·0
	8	0	893	59·2	50·4	8·8			0·4	0·4	NE by N.		3·5
	10	0	899	51·0	48·0	3·0			0·0	0·0			4·0
	18	0	29·909	49·1	46·9	2·2			0·2	0·1	NE by N ?	NNE.	9·0
	20	0	925	50·4	47·1	3·3			0·4	0·3	NE by N.	NNE.	9·7
	22	0	915	52·3	48·6	3·7	66·5		0·4	0·2	NE by N.	NNE.	8·8
June 17	0	0	906	55·9	51·7	4·2	42·0		0·4	0·4	NE by N.	NNE.	6·7
	2	0	897	54·9	51·0	3·9		0·000	0·4	0·3	ENE.	E.	1·0
	4	0	863	58·0	53·0	5·0			0·2	0·1	NE by E.		0·3
	6	0	842	61·0	55·0	6·0			0·1	0·1	NE by E.		0·0
	8	0	844	54·9	51·3	3·6			0·3	0·3	NE.		0·0
	10	0	852	47·2	46·6	0·6			0·3	0·1	NE.		10·0
June 18	0	0	...	...	...	...	61·9 45·3	0·000	0·2				
	18	0	29·807	46·6	45·8	0·8			0·5	0·5	NE by N.	NE by N.	10·0
	20	0	816	48·0	46·3	1·7	58·4		0·6	0·4	NE by N.	NE by N.	10·0
	22	0	828	48·8	46·3	2·5	45·4		0·6	0·5	NE by N.	NE by N.	10·0
June 19	0	0	835	50·8	47·8	3·0		0·007	0·9	0·4	NE by N.	NE by N.	10·0
	2	0	843	52·0	48·6	3·4			1·0	0·5	NE by N.	NNE.	9·9
	4	8	843	51·0	48·0	3·0			0·8	0·3	NE by N.	NE by N.	10·0
	6	0	842	51·5	48·0	3·5			0·4	0·2	NE by N.	NNE.	9·9
	8	0	864	49·5	46·2	3·3			0·4	0·2	NE by N.	NNE ? : N.	5·0
	10	0	890	46·0	44·3	1·7			0·1	0·0		NNE.	9·5
	18	0	29·929	47·3	44·0	3·3			0·2	0·0		N.	10·0
	20	0	938	51·1	47·0	4·1			0·0	0·0		NNE.	10·0
	22	0	952	55·3	50·0	5·3	52·5		0·2	0·1	NE by N.	NNW.	9·0
June 20	0	0	951	55·8	50·2	5·6	44·3		0·1	0·1	E ?	NNW, W, SSW.	3·0
	2	0	945	59·8	53·2	6·6		0·000	0·1	0·0	SW by S.	W ?	2·0
	4	0	917	63·7	55·6	8·1			0·1	0·0	ESE.		8·0
	6	0	886	66·1	57·7	8·4			0·1	0·0			9·8
	8	0	869	58·8	53·8	5·0			0·1	0·0	NNE.	N by W.	7·0
	10	0	864	56·0	53·9	2·1			0·1	0·0	SW by W.		8·0
	18	0	29·745	54·2	51·0	3·2			0·8	0·6	SW by S.	NW.	8·0
	20	0	737	56·2	53·6	2·6			1·5	0·3	WSW.	WSW : W.	10·0
	22	0	727	59·1	54·2	4·9	69·1		0·7	1·4	SW by W.	W.	10·0
June 21	0	0	732	60·2	54·4	5·8	49·4		1·0	0·2	WSW.	W.	9·0
	2	0	717	63·1	56·7	6·4		0·000	1·0	1·0	W by S.	W.	6·0
	4	0	713	64·7	56·7	8·0			1·1	0·8	WSW.	W by N.	8·5
	6	0	696	63·3	56·3	7·0			1·1	1·0	WNW. v.		6·0
	8	0	703	61·7	54·8	6·9			0·9	0·7	W. v.		0·5
	10	0	741	53·4	50·2	3·2			0·2	0·0			0·4
	18	0	29·792	51·3	48·1	3·2			0·0	0·0		W by N.	8·5
	20	0	813	57·0	51·0	6·0			0·0	0·0			9·0
	22	0	818	59·4	52·2	7·2	66·2		0·0	0·0			9·0
June 22	0	0	821	61·0	52·1	8·9	46·1		0·0	0·0		W by N.	6·0
	2	0	819	62·7	54·0	8·7		0·000	0·1	0·0		NW.	6·0
	4	0	815	63·7	54·7	9·0			0·2	0·3	ENE.	NW.	4·0
	6	0	804	64·0 ?	54·8 ?	9·2			0·1	0·0			1·0
	8	0	815	60·8	54·2	6·6			0·0	0·0			1·5
	10	0	837	52·3	49·1	3·2			0·3	0·2	NE by N.		0·8

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
4.	Linear and mottled cirri lying principally N. and S., moving very slowly.	B
6.	Reticulated cirri pointing N. to S. and E. to W.; sky very white on horizon.	B
8.	Woolly and mottled cirri.	W
10.	Woolly and woven cirri and cirrous haze.	W
18.	Scud; sky in zenith.	B
20.	Id.	B
22.	Id.	W
0.	Id.	W
2.	Masses of scud, apparently two currents, the mean direction of which is from about E.	W
4.	Small patches of scud and cirrous haze to E.	B
6.	Cirrous haze on E. horizon.	W
8.	Id.	W
10.	Homogeneous misty scud.	W
18.	Scud; a few drops of rain.	W
20.	Id.	W
22.	Id.	B
0.	Id.	B
2.	Id.	B
4.	Id.	W
6.	Id.	W
8.	Scud: woolly cirri, moving slowly; cirro-strati to E. and N.	B
10.	Waved mass of cirro-cumuli, streaked, reddish, and bluish, NE. horizon red. About an hour ago the sky began to be covered with fine cirro-cumuli, which assumed, in masses, forms like waves or undulations, the forms varying much and the cirro-cumuli becoming larger; they moved very rapidly from NNE. (quick moving cirro-cumuli are rarely seen.)	B
18.	Cirro-stratous scud moving very slowly.	W
20.	Scud, moving slowly.	W
22.	Large masses of cirrous-edged cirro-cumulo-strati.	B
0.	Patches of cirrous scud from various directions, chiefly from NNW.; cirrous haze on horizon.	B
2.	Scud; cirrous haze on horizon.	B
4.	Woolly and curled cirri and cirrous haze; band of cumulo-strati to S.	W
6.	Thick mass of cirrous clouds and haze.	W
8.	Varieties of cirri, scattered in all directions over the sky, moving very slowly.	B
10.	Masses of cirri and cirrous haze.	B
18.	Cirro-cumulo-strati and large cirro-cumuli, moving slowly ← mottled cirri.	W
20.	Scud to S.: cirro-cumulo-strati.	W
22.	Mottled, ragged, and other kinds of scud ← dense cirro-cumuli and cirrous haze; electric-looking.	B
0.	Scud ← cirro-strati and linear cirri.	B
2.	Scud and loose cumuli ← cirri to S.	W
4.	Scud and loose cumuli.	W
6.	Id.	W
8.	Cirro-strati on horizon.	B
10.	Id. to E. and N.; red to N.	W
18.	Cirro-cumulous scud ← cirro-cumuli and woolly cirri; cumulo-strati on E. and S. horizon.	W
20.	Cirro-strati diverging from NW.; dark cumuli to N.; cirro-cumuli to E. and S.	H
22.	Cirro-cumulous-cirrous-edged cumuli; fine linear cirri.	H
0.	Scud and cumuli ← cirrous haze on E. horizon.	W
2.	Cirrous-edged cumuli ← masses of woolly cirri.	B
4.	Id. in detached masses ← masses of cirro-cumuli to E.	W
6.	Patches of cumuli on horizon.	H
8.	Cirrous scud.	D
10.	Red and grey cirro-cumuli to N.; haze to E.	D

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.				Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.	Clouds moving from	
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
June 22	18	0	29·875	49·3	47·9	1·4	66·5 45·3	0·000	0·5	0·0			10·0
	20	0	871	53·0	50·4	2·6			0·0	0·0		W by S.	5·0
	22	0	862	58·3	54·0	4·3			0·1	0·0			0·3
June 23	0	0	852	62·8	56·9	5·9			0·0	0·0		WNW ?	0·8
	2	0	831	69·8	61·2	8·6			0·1	0·3	NE by N.	W by S : NNE.	7·0
	4	0	832	62·3	56·0	6·3			0·9	1·2	NE by E.	N by E.	8·0
	6	0	827	63·0	56·5	6·5			1·0	0·2	NE.	N by E.	6·0
	8	0	837	59·8	54·0	5·8			0·5	0·3	NE.	NW.	2·0
	10	0	862	53·9	50·2	3·7			0·4	0·1	NE by N.	NW by N.	3·0
	18	0	29·867	50·0	48·6	1·4	72·7 42·3	0·000	0·0	0·0			0·2
	20	0	874	56·8	52·2	4·6			0·0	0·2	NE.	ENE.	3·0
	22	0	870	59·8	54·8	5·0			0·2	0·1	NE by N.	NE by N.	8·7
June 24	0	0	869	62·9	55·9	7·0			0·1	0·1	NE by E.	NNE.	9·7
	2	0	853	60·1	55·2	4·9			0·2	0·2	NE by E.	NNE, N, NNW : NNE.	3·0
	4	0	842	62·0	56·0	6·0			0·3	0·2	ENE.	NNE.	1·0
	6	0	837	60·7	55·3	5·4			0·5	0·4	ENE.		0·3
	8	0	859	52·9	48·2	4·7			0·4	0·1	ENE.		0·3
	10	0	870	48·4	47·2	1·2			0·1	0·1	ENE.	NNE.	4·0
June 25	0	0	...	...	...	...	63·9 47·2	0·000	0·5				
	18	0	29·765	49·9	47·0	2·9	56·1 47·8	0·000	0·5	0·1	NE by N.	NE by N.	10·0
	20	0	766	50·2	47·8	2·4			0·3	0·2	NNE.	NE by N.	10·0
	22	0	759	52·2	48·6	3·6			0·3	0·2	NE by N.	NE.	10·0
June 26	0	0	760	54·3	49·9	4·4			0·5	0·2	NE by E.	NE.	10·0
	2	0	747	58·7	52·6	6·1			0·5	0·3	NE.	N by E : ENE.	7·7
	4	0	731	58·4	52·7	5·7			0·5	0·2	NE.	N, ENE, &c.	6·0
	6	0	708	56·2	52·5	3·7			0·5	0·4	NE.	N, NNE.	9·0
	8	0	712	52·3	49·7	2·6			0·3	0·2	NE.	NNE.	9·5
	10	0	712	50·2	48·0	2·2			0·2	0·0		NNE : NE.	6·0
	18	0	29·646	49·9	47·9	2·0	59·7 41·5	0·000	0·5	0·2	NE.	NE by N.	10·0
	20	0	647	50·7	48·2	2·5			0·3	0·3	NNE.	NE by N.	10·0
	22	0	639	51·7	49·2	2·5			0·4	0·3	NNE.	NNE.	10·0
June 27	0	0	641	52·9	49·6	3·3			1·0	0·5	NE by N.	NNE.	10·0
	2	0	619	53·9	49·3	4·6			1·2	0·8	NNE.	NNE.	9·8
	4	0	613	54·8	48·5	6·3			2·0	1·4	NE.	N by E, NNE : NW.	7·0
	6	0	607	52·0	46·8	5·2			1·6	0·5	NE by N.	N by E.	9·7
	8	0	588	50·1	45·7	4·4			1·5	1·0	NE.	NNE : NW.	7·0
	10	0	584	46·3	42·7	3·6			0·8	0·4	N by E.	N by E.	3·0
	18	0	29·503	46·4	43·6	2·8	55·9 44·0	0·000	1·4	0·6	N.	N : N by E.	9·3
	20	0	511	49·4	45·0	4·4			2·2	1·5	N.	N : N by E.	9·0
	22	0	499	51·6	45·6	6·0			2·8	1·7	N by W.	N by E.	9·5
June 28	0	0	500	52·9	46·7	6·2			1·8	1·6	N.	N.	9·8
	2	0	511	53·3	46·7	6·6			2·8	1·2	N.	N.	9·8
	4	0	526	52·2	46·0	6·2			2·2	0·7	NNE.	N.	9·0
	6	0	517	53·2	46·7	6·5			1·6	1·4	N by E.	N by E.	9·8
	8	0	539	50·0	44·2	5·8			1·3	0·4	N by E.	NNW.	8·0
	10	0	553	44·6	42·3	2·3			0·6	0·0		NNW.	5·0
	18	0	29·540	47·8	44·1	3·7	55·3 43·2	0·000	0·1	0·1	NNW.	N.	9·3
	20	0	544	50·2	46·2	4·0			0·2	0·1	NNW.	N.	10·0
	22	0	542	52·4	46·1	6·3			0·3	0·2	N.	N.	10·0
June 29	0	0	539	56·3	49·0	7·3			0·2	0·2	NW.	N by W.	9·8
	2	0	527	56·1	50·4	5·7			0·4	0·0		N by W.	10·0

June 23d 3h. Extra boards put round the sides of the thermometer case to guard the thermometers more effectually from the sun.

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
18.	Fog.	W
20.	Scud.	W
22.	Cirro-strati to ENE.	B
0.	Patches of small loose cumuli.	B
2.	Loose-edged cumuli : large cirro-cumuli.	W
4.	Cirro-cumuli-strati +— cumulo-strati to S.	W
6.	Id. +— cirrous haze on horizon.	W
8.	Id., thick to E. and becoming haze, lying in lines from NW.	B
10.	Id. +— bank of cirrous clouds to E.; sky hazy.	B
18.	Loose scud on E. horizon ; slight haze.	W
20.	Masses of scud.	W
22.	Cirrous scud.	B
0.	Small cirrous-edged cumuli.	B
2.	Scud, two currents meeting : mottled and reticulated cirri.	B
4.	Loose cirro-cumuli +— patches of scud to W. and NE.; masses of woolly and mottled cirri.	W
6.	Patches of scud to E.	W
8.	Id.	B
10.	Thin smoky scud, becoming bluish to SE.	B
18.	Scud.	B
20.	Id.	B
22.	Id.	W
0.	Id.	W
2.	Loose cumuli : woolly cirri.	W
4.	Cirrous scud and loose cumuli, various currents.	B
6.	Id.	B
8.	Scud; a streak of cirrus to NE.	W
10.	Smoky scud : cirro-cumuli and woolly cirri +— large red sheets of cirri and cirro-cumuli to N.	W
18.	Scud.	B
20.	Id.	B
22.	Id.	W
0.	Id.	W
2.	Id.	W
4.	Loose-edged cumuli, cumulo-strati and cirro-stratous scud : cirro-cumuli.	B
6.	Scud.	B
8.	Scud and loose cumuli : cirro-stratous scud and cirro-cumuli +— cumulo-strati on N. and S. horizon.	W
10.	Masses of scud.	W
18.	Scud : woolly cirri and large thin cirro-cumuli; a few drops of rain; showers around.	B
20.	Id. : id.	B
22.	Id. : cirro-cumulo-strati.	W
0.	Scud and loose cumuli.	W
2.	Id.	W
4.	Loose cumuli, scud, and masses of cirrous clouds.	B
6.	Id., id. +— cirro-cumuli; cirro-strati on NE. horizon.	W
8.	Cirro-cumulo-strati and cirro-strati +— cumulo-strati on E. horizon; mottled cirri to N.	W
10.	Scud, cirro-cumuli and woolly cirri.	W
18.	Smoky scud, ragged-edged cirro-cumuli; sky and cirro-strati to W.; thick clouds to E.	B
20.	Scud.	B
22.	Id.	W
0.	Scud and cumuli +— cirro-cumuli and cirrous clouds.	W
2.	Scud +— thick mass of cirro-stratus and haze.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
June 29	4	0	29·503	58·9	52·8	6·1			0·2	0·1	SW by S.	NW by N.	10·0
	6	0	491	55·8	53·1	2·7			0·2	0·0		WNW : NW.	9·8
	8	0	494	59·3 ?	52·8 ?	6·5 ?			1·5	0·5	W ?	WNW.	3·0
	10	0	512	52·6	49·1	3·5			0·4	0·1	W ?		3·5
	18	0	29·524	52·3	49·4	2·9	60·7 45·5	0·005	0·5	0·2	SW by W.	W.	10·0
	20	0	525	54·0	50·1	3·9			0·4	0·3	W by S.	W.	10·0
	22	0	509	56·0	51·4	4·6			0·4	0·6	W by S.	W.	9·9
June 30	0	0	498	59·6	53·0	6·6			0·7	0·3	NW.	W.	10·0
	2	0	489	60·9	53·8	7·1			1·9	0·4	WSW.	W.	10·0
	4	0	479	60·8	53·8	7·0			1·3	0·4	W.	W.	9·5
	6	0	484	60·0	54·2	5·8			1·5	1·8	W.		8·5
	8	0	498	56·6	51·5	5·1			1·3	1·2	W.	W by N.	8·0
	10	0	517	55·2	50·6	4·6			0·8	0·2	W by N.	WNW.	8·0
	18	0	29·607	52·7	49·0	3·7	62·3 47·4	0·000	0·5	0·4	SW by W.	WNW.	3·5
	20	0	603	56·9	52·1	4·8			0·5	0·7	W by S.	WSW : W by N.	8·5
	22	0	601	59·0	54·2	4·8			1·1	0·9	SW by W.	WSW.	10·0
July 1	0	0	598	61·0	55·9	5·1			0·9	0·4	SW by S.	WSW.	10·0
	2	0	582	62·7	57·0	5·7			1·3	0·8	SW.	WSW.	10·0
	4	0	573	60·9	56·2	4·7			2·7	1·7	SW.	SW by W : W by S.	10·0
	6	0	539	60·5	55·5	5·0			2·0	1·6	SW by S.	SW : WSW.	10·0
	8	0	508	57·3	54·4	2·9			3·0	1·8	SW by S.	SW.	10·0
	10	0	482	55·8	54·6	1·2			2·7	1·8	SW.	SW.	9·5
July 2	0	0	...	...	...	...	64·3 49·4		2·2				
	18	0	29·388	59·6	56·7	2·9	66·4 56·5	0·083	3·8	2·5	SW.	SW : W.	9·8
	20	0	405	60·3	55·9	4·4			2·8	2·8	SW.	SW.	6·5
	22	0	426	61·5	56·7	4·8			3·6	3·4	SW.	SW.	10·0
July 3	0	0	460	64·3	58·0	6·3			4·4	2·2	SW.	WSW.	9·0
	2	0	464	65·2	57·8	7·4			5·1	4·3	SW.	SW by W.	3·0
	4	0	491	64·2	57·0	7·2			4·3	3·0	SW.	SW : WSW.	8·5
	6	0	501	62·0	56·3	5·7			4·7	2·3	SW.	WSW.	3·5
	8	0	558	59·3	55·0	4·3			2·7	1·6	SW.	WSW.	3·0
	10	0	590	54·0	52·0	2·0			1·2	0·3	SW.	WSW.	0·8
	18	0	29·666	50·4	49·3	1·1	66·1 46·3	0·006	0·3	0·0			0·3
	20	0	683	54·8	51·6	3·2			0·4	0·4	SW by S.	WSW.	0·8
	22	0	692	60·0	53·0	7·0			0·7	1·0	SW by S.	SW by W.	3·0
July 4	0	0	693	62·8	54·0	8·8			1·1	0·5	SW by W.	SW by W.	7·0
	2	0	688	66·8	56·6	10·2			1·3	0·7	SW.	WSW.	4·5
	4	0	679	66·0	53·8	12·2			1·0	0·5	SW.	WSW.	2·5
	6	0	660	65·0	54·3	10·7			0·6	0·0			9·5
	8	0	646	58·0	53·8	4·2			0·1	0·0		S.	9·0
	10	0	635	57·8	54·1	3·7			0·0	0·0			10·0
	18	0	29·537	55·1	54·6	0·5	67·2 52·0	0·247	0·0	0·0			10·0
	20	0	524	58·1	57·0	1·1			0·0	0·0		SW.	10·0
	22	0	511	63·3	59·4	3·9			0·0	0·0		SSW.	10·0
July 5	0	0	510	62·9	60·3	2·6			0·0	0·0		S.	10·0
	2	0	477	66·0	62·0	4·0			0·1	0·1	NE.	SSE.	10·0
	4	0	431	62·7	60·4	2·3			0·6	0·5	NE by E.	SSE.	10·0
	6	0	389	61·1	61·0	0·1			0·9	0·2	NE by E.	S.	10·0

July 5d 6h. Extra observations of the Barometer made simultaneously at Berwick and Makerstoun.

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
4.	Scud; black to NW. and over the zenith.	B
6.	Id.: cirrous clouds; light rain lately, raining to SE. and E.; clouds breaking, sky in zenith and to W.; cumuli to SSE.	B
8.	Scud ← linear cirri, covering much of the sky; sheets of cirro-strati radiating from SE. where it is quite dark and like rain.	B
10.	Masses of scud and cumuli near horizon to S. and E.; cirro-cumuli and sheets of linear cirri tinged with red.	W
18.	Scud ← linear cirri and cirro-strati to E.	B
20.	Id. ← id.	B
22.	Id. ← woolly and mottled cirri.	W
0.	Id.	W
2.	Id. ← cirrous clouds and haze.	W
4.	Scud, cumuli, cumulo-strati and woolly cirro-cumuli; mountainous, ragged, and stormy-like cumuli to W. and SW., cumulo-strati with curled fronts; the sky has been very stormy-looking for the last two hours.	B
6.	Large thick masses of loose cumuli and scud, cumuli in strings like beads, cumulo-strati; thick woolly cirro-cumuli, linear cirri and cirrous haze scattered across the sky, cirro-strati to E.; the clouds are of all shades and thicknesses, black as night, white as snow, thin as smoke, thick as mud; the sky is of different tints, bluish, whitish, greenish; clouds moving at different elevations, and with different velocities.	B
8.	Scud and cumuli ← cumulo-strati, cirro-strati and mottled cirri.	W
10.	Scud ← cumulo-strati on N. horizon.	W
18.	Cirro-cumulous scud, cirro-cumuli ← fine cirri to NW.; ranges of cirro-strati to E. and S.	B
20.	Scud and cumuli: cirro-cumuli of various sizes and density ← fine lines of cirri to S.; black mass of scud rising in W.	B
22.	Scud ← cirro-strati to E.; a few drops of rain.	W
0.	Id.	W
2.	Id. ← cirrous clouds and haze to E.	W
4.	Scud and loose cumuli: cirro-cumulous scud and thick cirro-cumuli; cirrous haze over the sky; very stormy-looking; shower lately.	B
6.	Scud: thick cirro-strati and sheets of cirri.	B
8.	Id.; a few drops of rain.	W
10.	Id., moving quickly ← cirro-cumuli and cirrous haze; light rain.	W
18.	Loose scud: woolly cirro-cumuli.	W
20.	Scud.	W
22.	Id.; a few drops of rain.	B
0.	Cirrous scud; sky in patches.	B
2.	Scud, chiefly near horizon.	B
4.	Id.: cirro-stratous scud ← cumuli near horizon.	W
6.	Id. ← patches of woolly cirri; cumuli on N. and S. horizon.	W
8.	Sheets of cirrous scud ← beautiful ranges of pyramidal cumuli to S. and N.; cirro-strati to E.	B
10.	Cirrous scud ← cumuli to N.; cirro-strati to E.	B
18.	Masses of cumulo-strati on SE. horizon; patches of scud to S. and N.	W
20.	Patches of scud ← large masses of cumuli and cumulo-strati on S. and N. horizon.	W
22.	Cirrous-edged cumulo-strati.	B
0.	Id. [from WNW.	W
2.	Cirrous cirro-cumuli ← cumulo-strati; linear cirri rising from a patch of cirrous haze to W. and pointing	B
4.	Cirrous-edged cumuli, woolly, linear, and mottled cirri.	W
6.	Thick cirrous haze and linear cirri; cumulo-strati on E. and N. horizon.	W
8.	Scud ← cirrous haze, thick to W.; solar halo.	B
10.	Thick mass of cirro-stratus and haze, cedaraceous.	B
18.	Scotch mist.	W
20.	Scud.	W
22.	Id., moving slowly.	W
0.	Id.; dense cirro-stratus, a few drops of rain.	W
2.	Id.; id. ; hazy.	W
4.	Id.; id.	W
6.	Id. ← cirrous clouds and haze; heavy thunder showers lately.	W

Göttingen Mean Time of Observation.				Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
July	5	8	0	29·303	58·5	57·8	0·7			0·7	0·4	NE by E.	ENE : SSW.	10·0
		10	0	322	57·0	56·9	0·1			0·4	0·0		S.	10·0
		18	0	29·272	56·8	55·5	1·3			0·5	0·0		S.	10·0
		20	0	284	58·9	55·6	3·3	67·0 53·2		0·8	0·4	S by W.	SSW.	9·8
		22	0	287	61·6	57·1	4·5			1·0	0·8	SSW.	S by W.	9·5
July	6	0	0	306	63·0	58·0	5·0		0·184	1·4	1·0	SSW.	SSW.	9·8
		2	0	337	64·8	59·0	5·8			2·2	1·0	SW.	SW.	6·0
		4	0	406	61·8	55·3	6·5			1·7	0·5	SW by W.	SW by W.	9·8
		6	0	461	59·9	54·0	5·9			0·8	0·4	SW by W.	SW by W.	9·5
		8	0	505	55·7	52·8	2·9			1·1	0·6	SW by S.	SW.	4·0
		10	0	546	51·2	49·2	2·0			0·6	0·2	SW by S.		0·5
		18	0	29·574	47·4	46·6	0·8			0·2	0·0		SSE.	9·0
		20	0	585	55·2	53·0	2·2	66·5 45·5		0·0	0·0			9·0
		22	0	577	63·0	58·0	5·0			0·2	0·2	SSE ?	SW by S : SSW.	9·0
July	7	0	0	574	61·6	56·2	5·4		0·000	0·4	0·2	SW ?	S by W.	9·5
		2	0	570	66·8	59·2	7·6			0·5	0·3	SW by S.	S.	8·5
		4	0	567	65·0	58·0	7·0			0·6	0·2	SW.	S by W.	9·5
		6	0	576	57·9	56·8	1·1			0·1	0·1	NE.	SW by W : S by W.	9·8
		8	0	589	57·0	56·8	0·2			0·0	0·0		S.	9·5
		10	0	608	55·2	54·8	0·4			0·0	0·0		NW : S.	10·0
		18	0	29·628	51·9	51·0	0·9			0·0	0·0		S.	8·0
		20	0	645	58·0	55·3	2·7	67·9 47·8		0·0	0·0		SSW.	6·0
		22	0	658	61·3	56·4	4·9			0·0	0·0		SSE : S.	9·0
July	8	0	0	667	63·7	56·4	7·3		0·050	0·1	0·0		S ½ E.	9·0
		2	0	680	56·8	55·0	1·8			0·5	0·1	NNE.	ESE.	10·0
		4	0	716	55·8	54·0	1·8			0·4	0·1	NNW.	SSE.	10·0
		6	0	740	60·6	57·5	3·1			0·1	0·0		SE by S.	10·0
		8	0	769	57·9	54·2	3·7			0·2	0·1	SSE ?	ESE.	9·0
		10	0	802	54·5	53·3	1·2			0·2	0·0	SSE.	ESE.	3·5
July	9	0	0	...	...	...	...	66·3 52·2	0·331	0·4				
		18	0	29·850	53·7	52·8	0·9			0·6	0·0		ENE.	10·0
		20	0	856	60·9	58·1	2·8	64·3 51·3		0·0	0·0	SW.	ENE.	8·5
		22	0	839	65·6	58·9	6·7			0·2	0·2	N by W.	N : NE ?	8·5
July	10	0	0	849	63·9	55·0	8·9		0·005	0·6	0·3	NNE.		9·0
		2	0	860	63·7	56·6	7·1			0·6	0·5	NE by N.		7·5
		4	0	859	62·6	55·0	7·6			1·7	1·2	NNE.	N.	7·0
		6	0	859	60·6	55·0	5·6			1·2	0·2	NNE.		9·5
		8	0	880	58·8	53·1	5·7			0·3	0·2	N by E.	NNW : NNE : S.	9·8
		10	0	909	55·7	52·3	3·4			0·2	0·0		N.	8·0
		18	0	29·980	54·8	50·5	4·3			0·4	0·1	NNE.	NNW.	8·0
		20	0	30·008	57·0	52·1	4·9			0·7	0·3	NE by N.		9·0
		22	0	30·022	59·6	54·0	5·6	66·6 53·4		0·7	0·4	NE by N.	N by W.	9·2
July	11	0	0	30·027	61·2	54·0	7·2		0·000	0·5	0·2	NE by E ?	NNW.	8·0
		2	0	30·030	63·0	55·8	7·2			0·3	0·1	ENE.	NW.	9·0
		4	0	30·020	63·0	55·8	7·2			0·3	0·3	E.	N by W.	2·5
		6	0	30·002	59·3	55·3	4·0			0·3	0·1	E by N.		0·1

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
8.	A good deal of thunder with vivid flashes of lightning within the last hour, proceeding from a dark mass of scud to SW., W., and reaching past the zenith, the scud moving from SSW.; cirro-stratus and cirrous haze above; loose smoky scud, low from ENE.; the intervals between the lightning and the thunder changed from 20^s to about 10^s and 12^s. At $8^h\ 5^m$. A general Scotch mist; a vivid flash of lightning with thunder at $8^h\ 3^m$. Frequent flashes of lightning with thunder till $9^h\ 10^m$; the storm was most violent about $8^h\ 40^m$, the intervals being 5^s to 8^s. $9^h\ 10^m$. Loose scud acted on by currents in every direction, moving principally from the westward; the thunder ceased till $9^h\ 25^m$ when it recommenced in the ESE.	W
10.	Scud. The thunder still continues in the NE., frequent flashes of sheet-lightning; the thunder faint and distant. This storm commenced in the SW. and W., passed a little to the north of the zenith round towards the E. and NE.: it rained from 8^h till 9^h, occasional showers afterwards.	W
18.	Scud ← cirrous clouds and haze.	W
20.	Id. ← woolly and linear cirri and cirrous haze.	W
22.	Scud and loose cumuli.	W
0.	Id. ← patches of cirrous clouds.	W
2.	Loose-edged cumuli.	W
4.	Scud and loose cumuli.	W
6.	Id. ← cumulo-strati on N. and E. horizon.	W
8.	Cirrous scud ← cumulo-strati on S. and N. horizon; cirro-strati to E.	W
10.	Cumuli and cirro-strati to E.	W
18.	Mottled and linear cirri ← cirrous haze to E.; cirro-cumulous scud to N. and S.; portion of a solar halo.	W
20.	Cirrous haze and linear cirri; cirro-strati to SW.; large masses of scud to W.	W
22.	Scud and loose cumuli: woolly cirri; thick cirrous haze to E.	W
0.	Scud, loose cumulo-strati, &c. ← cirrous clouds; a few drops of rain.	B
2.	Cirrous-edged cumuli, scud, cirri, &c.; nearly as at 0^h.	B
4.	Scud and cumuli ← cirro-stratus scud.	W
6.	Scud: loose cumuli ← cirrous clouds; raining to NE., rainbow.	W
8.	Scud, moving very slowly ← cumuli to S.; shower lately, rain to E.	B
10.	Scud to N., very low: scud; cirrous haze.	B
18.	Cirro-cumulous scud ← patches of mottled cirri; cirro-strati to NE.	W
20.	Masses of scud and cumuli ← large cirro-cumuli and patches of woolly and mottled cirri.	W
22.	Scud and cumuli: woolly cirri ← cumulo-strati near horizon; cirrous haze.	B
0.	Scud and cumuli ← woolly cirri; sky electric-looking; rain to NW.?	B
2.	Thunder-storm, vivid flashes of lightning and loud peals of thunder; the thunder-clouds about a mile distant: scud and heavy cumuli; beautiful pinnacled cumulo-strati to E., cirrous haze; heavy rain; storm moving off to WNW.	B
4.	Scud and cumuli, very dark and electric to W. ← cirrous clouds and linear cirri; the thunder-storm continued till 3^h, chiefly at the distance of a mile, with heavy showers.	W
6.	Scud and cumuli ← cirrous clouds; cirro-strati to E.: the quantity of rain since 1^h is 0·331 in.	W
8.	Cirro-stratous scud ← cirro-cumuli; cirro-strati on horizon; black ranges of cumulo-strati to E. and SE.	B
10.	Loose cirro-cumuli and scud.	B
18.	Thick cirro-cumulous mass ← cirrous haze.	B
20.	Id. id.	B
22.	Patches of scud: cirro-cumulo-strati and cirro-cumuli ← cumulo-strati to SE.	W
0.	Thick cirro-cumulous and cirrous mass.	W
2.	Cirro-cumulo-strati; patches of scud to S.; cumuli on SW. horizon.	W
4.	Cirro-stratous scud, thin cirro-cumuli, and mottled cirri ← cirrous haze, cirro-strati.	B
6.	Cirro-cumulo-strati; cirro-strati.	W
8.	Cirro-cumulous scud: large cirro-cumuli. $8^h\ 50^m$. Fine cirro-cumulous scud from N., woolly cirro-cumuli moving slowly from N.; regularly formed woolly cirri moving quickly from S.	W
10.	Cirro-stratous scud, cirro-cumulo-strati.	W
18.	Cirro-cumulo-strati, lying in strata to N. and E.; scud on Cheviot.	B
20.	Id.	B
22.	Scud and loose cumuli ← detached masses of cumuli to E. and S.	W
0.	Id.	W
2.	Id.	W
4.	Detached masses of cumuli and scud, the latter acted on by different currents.	W
6.	Patches of clouds near horizon.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
July 11	8	0	29·999	57·1	53·6	3·5			0·1	0·0		N.	0·5
	10	0	30·003	52·3	49·8	2·5			0·0	0·0		N.	0·3
	18	0	29·948	51·3	50·2	1·1			0·3	0·0	SSE ?	NW.	9·9
	20	0	927	58·8	56·0	2·8			0·1	0·3	S by W.	NW.	9·9
	22	0	914	62·0	58·0	4·0	66·1		0·8	0·6	SSW.	SW.	10·0
July 12	0	0	894	65·8	59·9	5·9	45·5		0·9	0·7	SSW.	WSW.	10·0
	2	0	865	61·2	57·0	4·2		0·000	1·9	0·8	SW by S.	SW by W.	10·0
	4	0	856	58·2	56·1	2·1			1·7	0·5	SW.	SW by W.	10·0
	6	0	839	55·9	54·9	1·0			0·7	0·3	SW.		10·0
	8	0	834	56·5	55·2	1·3			0·4	0·2	SW.	W ?	10·0
	10	0	830	56·1	55·3	0·8			0·3	0·0		WNW.	9·8
	18	0	29·826	54·9	53·9	1·0			0·1	0·0	WSW ?	NW : NNW : SE by S.	9·0
	20	0	847	58·2	55·7	2·5			0·2	0·0	WSW ?		8·0
	22	0	846	63·2	57·9	5·3	67·2		0·1	0·0	NW ?	N by E.	9·8
July 13	0	0	851	63·7	59·6	4·1	52·5		0·2	0·1	NE by E ?	W ?	9·5
	2	0	850	62·9	58·8	4·1		0·148	0·5	0·3	E.	NE by N : N.	7·0
	4	0	849	62·7	57·9	4·8			0·4	0·2	ESE.	ENE : NW.	4·0
	6	0	841	63·0	59·3	3·7			0·3	0·0	ESE ?	NNW : ENE : WSW.	3·5
	8	0	833	59·0	57·0	2·0			0·3	0·2	SSE ?	N by W : WSW ?	3·0
	10	0	849	55·2	54·3	0·9			0·1	0·0		NNW ?	3·0
	18	15	29·826	50·7	49·8	0·9			0·0	0·0		SW by S.	2·5
	20	0	833	55·9	54·0	1·9			0·0	0·0		S : SW.	7·0
	22	0	820	60·9	56·7	4·2	66·2		0·0	0·0		SW by S.	3·5
July 14	0	0	819	64·3	58·0	6·3	46·2		0·4	0·2	WSW.	WSW.	9·0
	2	0	804	65·9	58·9	7·0		0·002	0·4	0·2	WSW.	W by S.	9·5
	4	15	785	65·8	58·9	6·9			0·8	0·9	SW.	W by N.	7·0
	6	0	780	62·8	57·3	5·5			1·1	0·7	SSW.	WNW.	4·0
	8	0	776	58·9	55·6	3·3			0·9	0·4	SSW.	NNW.	3·5
	10	0	773	55·0	52·4	2·6			1·0	0·2	SW.	NNW.	2·5
	18	0	29·683	59·2	56·8	2·4			0·6	0·4	SW.	WSW : WNW.	6·5
	20	0	686	61·1	58·3	2·8			0·6	0·3	SW.	WSW : W : W.	9·5
	22	0	665	65·7	61·6	4·1	69·5		1·6	1·0	SW by W.	W.	7·5
July 15	0	0	694	65·5	60·1	5·4	51·5		1·8	0·7	WSW.	W.	9·5
	2	0	718	66·7	59·0	7·7		0·000	2·1	0·8	WSW.	W by S.	3·0
	4	0	739	65·1	56·7	8·4			1·4	1·6	W.	W.	0·5
	6	0	771	62·6	55·1	7·5			2·6	1·4	W by N.	W.	1·5
	8	0	812	55·2	50·8	4·4			1·1	0·4	W by S.	WNW : W.	2·0
	10	0	824	53·0	48·8	4·2			0·6	0·3	W ?		1·5
July 16	0	0	...	...	...	...	68·6 51·2		1·1				
	18	0	29·928	49·8	47·7	2·1			2·6	0·0		W by S.	10·0
	20	0	947	52·9	50·3	2·6			0·0	0·0		W.	10·0
	22	0	928	57·1	54·3	2·8	67·5		0·3	0·1	SW.	WSW.	10·0
July 17	0	0	892	63·3	58·3	5·0	45·3		0·6	0·4	SW.	SW.	10·0
	2	0	867	60·8	57·2	3·6		0·000	0·6	0·3	SW.	SW.	10·0
	4	0	830	62·2	58·7	3·5			0·6	0·4	SW.	SW by W.	10·0
	6	12	779	59·0	58·6	0·4			0·6	0·1	SW.		10·0
	8	0	745	58·8	58·8	0·0			0·3	0·1	SW.	WSW.	10·0
	10	0	705	58·8	58·2	0·6			0·5	0·1	SW.	WSW.	10·0
	18	0	29·428	57·9	57·1	0·8			3·4	1·8	SW.	SW.	10·0
	20	0	401	57·8	57·0	0·8			1·4	0·7	SW.	SW.	10·0
	22	0	457	56·4	54·6	1·8	65·2 52·6		0·9	0·1	N.	NNW.	10·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
8.	Patches of cirrous clouds to S.	W
10.	Scud and patches of cirri.	W
18.	Thin cirrous scud ← thick mass of cirrous haze and linear cirri; a few drops of rain; a strip of greenish sky to E.	B
20.	Nearly as before; broken cirrous scud; drops of rain, dark to E.	B
22.	Masses of scud ← thick mass of cirrous clouds and haze and dense cirro-cumuli.	W
0.	Scud ← cirrous clouds and haze.	W
2.	Id. ← id.; light rain.	W
4.	Id. ← id.	B
6.	Id. ← id.; raining.	B
8.	Id. ← id.	W
10.	Id. ← thick cirro-cumulous and cirrous mass, tinged with red half an hour ago.	W
18.	Scud: cirro-cumulous scud: cirri ← thick mass of cirrous haze; cumulo-strati to E.	B
20.	Haze thinner than before, more scud and cirri; upper half of a solar halo.	B
22.	Scud and cumuli ← patches of cirri.	W
0.	Id., moving slowly.	W
2.	Loose scud: cirrous-edged cumuli ← patches of cirri.	W
4.	Scud: cumuli.	B
6.	Three currents of scud; cumuli to SSE.	B
8.	Two currents of scud.	W
10.	Scud ← cirro-cumulo-strati to S.	W
18.	Cirrous scud ← a beautiful range of cumulo-strati to E.	B
20.	Scud: cirrous scud ← long lines of pectinated cirri, the backs or midribs lying N. and S., and the teeth E. and W.	B
22.	Scud and cirrous-edged cumuli ← patches of linear cirri.	W
0.	Scud and cumuli.	W
2.	Id.	W
4.	Cirrous scud ← patches of linear cirri.	B
6.	Id. ← id.	B
8.	Cirro-cumuli, covered and mixed with woolly cirri, waved in some places ← varieties of cirri; scud to NW.	W
10.	Cirro-cumuli lying N. by E. to S. by W., tinged with red ← woolly and mottled cirri.	W
18.	Detached patches of scud: sheets of loose cirro-cumuli, moving slowly ← cumulo-strati on E. horizon.	B
20.	Smoky scud: dark extensive mass of cirro-stratous scud rising from W.: dense cirrous mass.	B
22.	Loose scud, moving quickly ← woolly and mottled cirri.	W
0.	Id. ← linear cirri and woolly cirro-cumuli.	W
2.	Loose-edged cumuli ← linear and mottled cirri; cirrous haze.	W
4.	Id. ← patches of cirro-cumuli.	W
6.	Cirrous scud and cumuli ← patches of woolly and mottled cirri.	W
8.	Patches of cirri: cumuli, moving slowly ← flounder-shaped masses of beautiful cirri.	B
10.	Strata of cirro-cumuli to N. and sheets of cirri to S.	B
18.	Scud.	W
20.	Id. ← dense cirro-stratus and haze.	W
22.	Id. ← id.	B
0.	Id. ← id.	B
2.	Id. ← id.	B
4.	Id.	W
6.	Homogeneous; light rain.	W
8.	Scud.	B
10.	Id.; rain.	B
18.	Loose scud, low and moving quickly ← thick cirrous clouds and haze; patches of dark-blue clouds to E.	W
20.	Loose scud ← dense cirro-stratus and haze; light rain.	W
22.	Id. ← id.; light drizzle.	B

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
July 18	0	0	29·518	54·9	52·2	2·7		0·348	0·7	0·1	N by W.	NNW.	10·0
	2	0	519	62·8	57·9	4·9			0·1	0·1	SSW.	NW.	7·0
	4	0	522	62·6	56·9	5·7			0·2	0·2	ENE.	NNW.	5·0
	6	0	518	59·3	55·9	3·4			0·4	0·0		WNW.	7·3
	8	0	521	58·0	52·7	5·3			0·5	0·1	NW by W ?	S by W.	3·0
	10	0	526	52·0	48·2	3·8			0·5	0·1	W.	S by W.	1·5
	18	0	29·414	51·0	48·6	2·4			0·3	0·4	SW.	WNW : WSW.	6·0
	20	0	409	54·0	50·9	3·1	64·2		0·4	0·4	WSW.	WNW.	10·0
	22	0	431	50·0	49·4	0·6	47·4		0·4	0·1	NW ?	NW by W.	10·0
July 19	0	0	450	53·0	50·1	2·9		0·098	0·4	0·2			9·9
	2	0	441	57·9	51·8	6·1			0·2	0·1	NNE.	NNW.	7·0
	4	0	451	55·0	52·3	2·7			1·3	0·1	N by E.	NNW.	8·0
	6	0	456	55·6	52·3	3·3			0·2	0·3	NNE ?	NW.	8·0
	8	0	478	52·2	49·9	2·3			0·2	0·1	NNE.	NNW.	9·5
	10	0	490	51·0	49·7	1·3			0·1	0·0		NW.	10·0
	18	0	29·442	47·5	45·5	2·0			0·0	0·0		NW.	9·8
	20	0	359	51·3	48·5	2·8	60·9		0·4	0·2	SW.	W by S.	10·0
	22	0	373	53·6	50·6	3·0	45·5		0·6	0·4	SW.	WSW.	10·0
July 20	0	0	326	51·2	50·1	1·1		0·292	0·6	0·4	SW by S.		10·0
	2	0	259	53·8	52·2	1·6			0·7	0·2	SW.	W.	10·0
	4	0	228	55·9	53·0	2·9			1·3	0·3	SW.	W by S.	10·0
	6	0	205	56·4	53·0	3·4			0·8	0·4	SW.	W.	10·0
	8	0	213	55·1	52·0	3·1			1·2	0·8	WSW.	WNW.	9·0
	10	0	232	52·7	50·8	1·9			0·9	0·5	W by S.	NW.	7·0
	18	0	29·265	53·1	50·2	2·9			0·6	0·5	W.	NW : WNW.	10·0
	20	0	290	54·3	51·8	2·5	56·5		0·6	0·2	W.	NW.	10·0
	22	0	310	57·3	53·3	4·0	49·3		0·5	0·4	W by N.	WNW.	9·8
July 21	0	0	337	55·0	53·7	1·3		0·040	0·4	0·1	N.	NW by W.	9·8
	2	0	360	59·9	52·9	7·0			0·3	0·4	NW.	WNW.	7·5
	4	0	380	61·7	52·6	9·1			0·7	0·7	NNW.	NW by N.	3·0
	6	0	413	60·0	52·0	8·0			1·4	0·7	N.		2·5
	8	0	468	53·0	50·1	3·1			1·6	0·0			0·8
	10	0	503	50·1	47·8	2·3			0·1	0·0	NNE ?	WNW.	6·0
	18	0	29·470	47·2	46·6	0·6			0·0	0·0			9·0
	20	0	446	55·6	53·0	2·6	62·4		0·0	0·0		NW.	9·8
	22	0	421	59·8	55·3	4·5	42·9		0·6	0·5	SW.	SW.	10·0
July 22	0	0	397	63·2	58·8	4·4		0·000	0·4	0·2	SW.	WSW.	10·0
	2	0	360	60·8	57·2	3·6			0·1	0·0	SW.	WSW.	10·0
	4	0	326	59·1	57·7	1·4			0·0	0·0		WSW.	10·0
	6	0	289	58·6	57·7	0·9			0·0	0·0		W.	10·0
	8	0	251	56·8	55·3	1·5			0·1	0·1	WSW ?	W.	10·0
	10	0	208	55·9	54·2	1·7			0·1	0·0		W.	10·0
July 23	0	0	...	...	...	...	67·0 46·2	0·386	6·1	5·0	NNE.		
	18	0	29·734	51·4	48·2	3·2			4·7	0·0		WNW.	8·5
	20	0	756	52·8	49·2	3·6	57·2		0·0	0·0		WNW.	9·0
	22	0	770	54·9	48·7	6·2	40·8		0·3	0·1	W by N ?	NNW.	10·0
July 24	0	0	786	56·8	49·7	7·1		0·000	0·4	0·1	NNW ?	NNW.	10·0
	2	0	797	59·8	51·0	8·8			0·3	0·3	NNW.	NW.	9·5
	4	0	805	59·4	51·4	8·0			0·2	0·1	NNW.	WNW.	6·5
	6	0	812	60·8	51·4	9·4			0·0	0·0	NW by N ?	WNW.	8·5

July 24^{d} 5^{h}—25^{d} 23^{h}. The water having been taken out of the anemometer cistern, the force of the wind was estimated.

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	Scud ← dense cirro-stratus and haze; light drizzle.	B
2.	Cirrous-edged cumuli and scud ← cumulo-strati to S.	B
4.	Cumuli and cirrous scud, very low on the side of Cheviot: a large black lowering mass of scud from about W. half an hour ago.	W
6.	Scud and cumuli.	W
8.	Cirro-cumulous scud ← cumulo-strati to SE.	B
10.	Cirri and cirro-cumuli ← cirro-strati to E.	B
18.	Loose scud: cirro-cumuli and cirrous scud.	W
20.	Scud.	W
22.	Id.; heavy rain.	B
0.	Id. ← cirrous clouds; drizzle.	B
2.	Scud and cumuli ← cirri; heavy rain to SE.	B
4.	Scud ← fine ranges of cumuli, mixed with cirrous clouds, to E; dark and raining to SW.; occasional showers.	W
6.	Scud and cumuli ← patches of cirrous clouds; raining heavily to SE. from a black mass of scud; heavy shower of rain and hail lately. $6^{h}\ 20^{m}$. A large mass of cumuli, nimbi, and scud, covering three parts of the sky, converging to a deep black to SE. where it appears to rain heavily.	W
8.	Heterogeneous scud ← cumuli on E. horizon.	B
10.	Scud.	B
18.	Id. ← cirro-stratus on E. horizon.	H
20.	Id.	H
22.	Id.; light rain.	W
0.	Rain.	W
2.	Scud; light rain.	W
4.	Id.	W
6.	Id.; the sun's disc just visible through a dense cirrous mass.	B
8.	Id.; cirrous clouds and haze.	D
10.	Id. ← cirro-cumuli and cirrous clouds; dark mass of scud to E.	W
18.	Id.: cirrous scud.	W
20.	Id.; a few drops of rain.	W
22.	Cirro-strati and scud; shower.	B
0.	Scud ← cirro-strati and cumuli to NE.; showers.	B
2.	Scud and cumuli ← range of cumuli from WNW. to ESE. forming half of a great circle, making an angle of 8° with the N. horizon.	B
4.	Cumuli, apparently acted on by several currents ← cumulo-strati on horizon; patches of mottled cirri.	W
6.	Masses of cirro-cumuli and cirri ← cumulo-strati on NE. and SW. horizon.	W
8.	Masses of scud and cumuli to SW.; linear cirri lying NNW. to SSE.; cirro-strati to NE.	W
10.	Cirro-cumulo-strati ← linear cirri.	B
18.	Cirro-cumuli and cirrous haze over the sky; cirro-strati on NE. and E. horizon.	W
20.	Sky densely covered with cirrous haze and cirro-cumuli, moving very slowly ← cirro-strati to E.	W
22.	Scud ← cirro-cumuli and cirrous haze.	B
0.	Id. ← id. ; drops of rain.	B
2.	Id.; light shower.	B
4.	Id.; rather heavy rain.	W
6.	Id.; id.	W
8.	Id.; light rain; clouds breaking.	B
10.	Id.	B
18.	Woolly cirro-cumuli ← cirro-strati to E.	B
20.	Id. ← cumulo-strati to N.; cirrous haze to W. and NW.	B
22.	Scud and loose cumuli.	W
0.	Scud and cumuli.	W
2.	Id.	W
4.	Cirro-cumulous scud and cumuli.	B
6.	Id.	B

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10
July 24	8	0	29·845	55·4	52·0	3·4			0·2	0·1	NNE?	WNW.	6·0
	10	0	869	52·0	48·7	3·3			0·0	0·0		NW.	8·0
	18	0	29·931	43·3	42·8	0·5			0·0	0·0		NNW.	1·5
	20	0	938	52·9	51·5	1·4			0·0	0·0		NW.	6·5
	22	0	944	60·7	55·2	5·5	61·4		0·0	0·0		NW.	9·0
July 25	0	0	954	63·7	58·1	5·6	36·4	0·000	0·0	0·0		NW.	10·0
	2	0	947	64·7	59·6	5·1			0·0	0·2	W.	NW.	9·5
	4	0	943	66·0	60·0	6·0			0·0	0·0		WNW.	10·0
	6	0	941	64·8	60·1	4·7			0·0	0·2	SSW.	WNW.	10·0
	8	0	950	61·0	56·7	4·3			0·0	0·0		WNW.	10·0
	10	0	952	57·0	55·0	2·0			0·0	0·0		NW.	8·0
	18	0	29·910	57·4	56·3	1·1			0·0	0·2	SW.		10·0
	20	0	908	61·0	59·0	2·0			0·0	0·1	SW by W?		10·0
	22	0	883	65·5	62·7	2·8	67·6		0·0	0·3	SSW.	SW?	10·0
July 26	0	0	858	65·6	62·5	3·1	53·5	0·005	0·7	0·7	SW by S.	WSW.	10·0
	2	0	831	66·7	63·4	3·3			1·4	0·8	SSW.	WSW.	10·0
	4	0	800	65·3	62·8	2·5			1·7	1·3	SW.	WSW.	10·0
	6	0	780	64·2	61·2	3·0			1·9	0·6	SW by S.	WSW.	10·0
	8	0	762	62·4	60·0	2·4			1·3	0·3	SW by S.	WSW.	10·0
	10	0	735	59·5	57·3	2·2			1·3	0·4	SW by S.	W by S.	10·0
	18	0	29·738	51·5	49·5	2·0			1·4	0·1	W by S.	WNW? : WSW.	1·5
	20	0	732	56·1	52·3	3·8			0·6	0·2	SW by W.	WNW.	1·0
	22	0	721	61·3	55·2	6·1	67·8		1·2	1·2	WSW.	W : W by N.	9·0
July 27	0	0	715	63·3	55·8	7·5	50·4	0·007	1·2	0·6	W by S.	W.	8·0
	2	0	702	64·1	55·8	8·3			1·9	1·5	W by N.	W.	7·0
	4	0	702	61·8	54·2	7·6			2·3	1·8	W. v.	W by N.	2·0
	6	40	699	60·0	55·0	5·0			1·3	0·2	W.	NW.	10·0
	8	0	732	57·7	51·8	5·9			1·1	0·8	NNW.	NW by N.	9·8
	10	0	745	54·6	52·3	2·3			0·7	0·0		NW.	8·0
	18	0	29·770	51·2	50·9	0·3			0·0	0·0		W.	10·0
	20	0	774	54·8	52·9	1·9			0·0	0·0		SSW : NW.	9·0
	22	0	760	59·0	55·5	3·5	66·2		0·0	0·0		WSW : NNW.	9·5
July 28	0	0	725	64·1	58·6	5·5	49·2	0·056	0·1	0·1	SSW.	WSW : NW.	10·0
	2	0	695	59·9	54·7	5·2			0·4	0·2	SW by S.	SW : NW.	10·0
	4	0	656	58·9	54·0	4·9			0·7	0·4	SSW.	SSW? : N?	10·0
	6	0	624	53·0	52·3	0·7			0·4	0·1	SSW.		10·0
	8	0	579	53·4	51·9	1·5			0·2	0·0		SSW.	10·0
	10	0	518	52·9	51·6	1·3			0·1	0·0			10·0
	18	0	29·328	54·0	53·0	1·0			0·2	0·1	SSW.	W by S : SW.	9·8
	20	0	281	60·8	58·0	2·8			0·1	0·3	SSW.	SW : WSW.	8·0
	22	0	242	63·0	57·6	5·4	66·7		1·6	0·7	SW by S.	S by W.	9·5
July 29	0	0	217	65·0	59·4	5·6	51·5	0·074	1·3	0·7	SW by S.	WSW.	9·5
	2	0	173	61·3	56·9	4·4			1·9	0·5	SW.	SW : W by S.	10·0
	4	0	158	57·3	55·0	2·3			0·9	0·3	SW.	WSW?	10·0
	6	0	135	58·7	54·2	4·5			0·3	0·5	SW by W.	W by S.	9·8
	8	0	142	55·0	53·2	1·8			0·6	0·0		W.	9·0
	10	0	160	53·8	51·0	2·8			0·2	0·0		W.	9·5
July 30	0	0	...	...	...	...	66·5 49·2		0·6				
	18	0	29·513	52·0	50·5	1·5			1·7	0·0		NNW : NW.	7·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
8.	Cirro-cumulous scud and cumuli.	W
10.	Dark lowering masses of scud have moved up, at first deeply tinged with red near the horizon.	W
18.	Linear and woolly cirri +— patches of cirro-cumulous scud to N. and SW.; cirro-strati to E.	B
20.	Cirro-cumulo-strati +— linear cirri to N.	B
22.	Id. +— detached masses of cumuli to N. and E.; dense cirrous haze.	W
0.	Scud and cumuli, moving very slowly +— cirrous haze.	W
2.	Id. +— id.	W
4.	Scud +— cirrous haze.	W
6.	Id.	W
8.	Id.	W
10.	Cirro-cumulo-strati.	W
18.	Homogeneous.	B
20.	Id.	B
22.	Scud +— dense cirro-stratus and haze.	W
0.	Id. +— id.	W
2.	Id. +— id.	W
4.	Id. +— id., and thick cirro-cumuli.	B
6.	Id. +— id.	B
8.	Id. +— id.	W
10.	Id. +— cirrous haze; thin cirro-cumuli; clouds to E. slightly tinged with red.	W
18.	Scud to W.: patches of cirro-cumuli +— mass of linear cirri and cirrous haze, fringed with curled cirri; cirro-strati to E.; watery cumuli on [Cheviot.	B
20.	Scud +— a few patches of linear cirri and cirro-strati to E.	B
22.	Scud and cumuli: cirrous scud +— detached masses of cumuli on N. and E. horizon.	W
0.	Id. +— patches of cirri.	W
2.	Id. +— id.; cirro-cumuli.	W
4.	Cirro-cumulous scud +— cumuli round horizon; rain to E.	B
6.	Thick masses of scud +— cirrous scud; passing shower; cumulo-strati on horizon.	W
8.	Dark scud +— cumuli; shower. 8h 10m. A complete double rainbow.	W
10.	Scud +— cirrous haze to W.	W
18.	Ragged and cirro-cumulous scud, and cirro-cumuli +— linear cirri and cirrous haze to E., fringed with curled cirri; cirro-strati; clouds on Cheviot; about 4° of a solar halo visible, being at the southern extremity of the horizontal diameter; in the midst of it is a parhelion about 1° in diameter shewing prismatic colours, this is in interlaced linear cirri. 18h 30m. The lowest scud from SSW., the upper cirro-cumulous scud from W.	B
20.	Scud: woolly cirro-cumuli, becoming haze near horizon and thick and ribbed to E.; sky in zenith; portion of a colourless halo visible?	B
22.	Masses of scud: large cirro-cumuli +— thick cirrous haze to E.	W
0.	Scud: cirro-cumulo-strati.	W
2.	Masses of scud: dense mass of cirro-cumuli and cirrous haze.	W
4.	Patches of scud to S.: dense mass of heterogeneous cirri, moving very slowly.	B
6.	Id.: id.; light rain.	B
8.	Scud +— dense cirrous haze.	W
10.	Homogeneous scud.	W
18.	Cirrous and cirro-cumulous scud: woolly cirro-cumuli.	B
20.	Scud, moving rapidly: cirrous scud and cirrous-edged cumuli. 20h 10m. The wind commenced blowing [0·8 lbs.	B
22.	Scud and cumuli +— beautiful ranges of cumuli to E.; cirro-strati to E.	W
0.	Scud.	W
2.	Two currents of scud; dense cirro-stratus and haze.	W
4.	Scud; heavy showers.	B
6.	Scud and cumuli +— cirrous clouds to E.	W
8.	Scud +— patches of cirro-cumuli and mottled cirri, and cirrous haze; a double rainbow lately.	W
10.	Scud.	W
18.	Id.: cirrous scud +— cumulo-strati on N. horizon.	W

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			1–10.
July 30	20	0	29·546	56·6	53·9	2·7	66·0		0·0	0·0		NW.	9·8
	22	0	567	58·2	52·3	5·9	50·5		0·2	0·0		W by N.	8·5
July 31	0	0	584	59·7	55·7	4·0		0·193	0·0	0·0		WNW.	9·9
	2	0	581	66·1	59·7	6·4			0·0	0·0		WNW.	8·0
	4	0	575	64·0	56·0	8·0			0·9	0·7	NW by W.		10·0
	6	0	576	60·0	54·2	5·8			0·9	0·3	W.	W by N.	10·0
	8	0	594	55·9	51·9	4·0			0·5	0·1	W by N ?	NW by W : NNW.	9·0
	10	0	605	53·8	50·3	3·5			0·2	0·0	SW by W ?	WNW ?	10·0
	18	0	29·528	52·4	50·7	1·7			0·4	0·0		W by S.	10·0
	20	0	508	54·6	52·3	2·3	68·0		0·7	0·5	SW by W.	SW by W.	10·0
	22	0	503	56·2	54·4	1·8	50·4		1·4	0·9	SW by W.	SW by W.	10·0
Aug. 1	0	0	490	58·8	56·4	2·4		0·121	1·8	1·2	SW.	SW by W.	10·0
	2	0	496	61·0	58·0	3·0			2·3	0·6	SW.	SW.	10·0
	4	0	494	59·0	56·9	2·1			1·6	1·2	SW.	SW by S.	10·0
	6	0	491	59·1	56·7	2·4			1·4	0·2	WSW.	SW.	10·0
	8	0	477	57·7	55·3	2·4			1·3	0·4	SW.	SW.	10·0
	10	0	472	55·8	54·4	1·4			1·3	0·3	SW.	SW.	10·0
	18	0	29·352	54·3	52·7	1·6			0·9	0·0		SW.	10·0
	20	0	334	56·5	54·0	2·5	62·4		0·4	0·0	S by E ?	SW.	10·0
	22	0	304	57·8	55·0	2·8	52·4		1·0	1·0	S by W.	SSW.	10·0
Aug. 2	0	0	270	60·8	57·5	3·3		0·026	1·1	0·7	S by W.	SSW.	10·0
	2	0	238	60·4	56·8	3·6			1·5	0·7	S.	SSW.	10·0
	4	0	197	63·0	59·0	4·0			1·2	0·4	S.	S by W.	10·0
	6	0	149	63·7	58·9	4·8			1·1	2·2	SSW.	S by W.	9·3
	8	0	176	56·3	54·4	1·9			2·1	0·2	SSW.	SW : SSW.	2·0
	10	0	165	55·1	53·3	1·8			0·0	0·0		SSW ?	8·0
	18	0	29·103	54·4	53·8	0·6			0·0	0·0		SW.	9·5
	20	0	115	57·0	56·0	1·0	66·3		0·0	0·0		SW.	9·0
	22	0	126	62·9	58·8	4·1	51·2		1·0	0·7	SW.	SW : SW by S : S by W.	8·5
Aug. 3	0	0	129	65·3	59·4	5·9		0·068	0·9	0·8	SW.	SW : SW.	8·0
	2	0	121	65·6	58·9	6·7			1·1	0·6	SW.	SW.	7·0
	4	0	130	66·0	58·3	7·7			1·2	0·3	W ?	SW.	6·5
	6	0	136	61·0	56·6	4·4			0·7	0·0		SW.	6·0
	8	0	141	55·3	53·8	1·5			0·2	0·0		NNW.	6·0
	10	0	145	52·3	51·7	0·6			0·0	0·0		W ?	5·5
	18	0	29·132	52·3	51·3	1·0			0·0	0·0		W by N.	10·0
	20	0	145	58·0	56·0	2·0	68·2		0·0	0·0		W.	9·8
	22	0	152	62·3	58·3	4·0	49·0		0·1	0·0		W.	8·0
Aug. 4	0	0	155	66·9	59·7	7·2		0·004	0·0	0·0		W by S.	9·0
	2	0	184	61·0	56·3	4·7			0·2	0·1	N.	NNW.	9·3
	4	0	197	64·0	59·0	5·0			0·0	0·0		NW.	4·0
	6	0	228	57·1	55·9	1·2			0·1	0·0		WNW.	10·0
	8	0	257	57·3	56·6	0·7			0·0	0·0		WNW.	8·0
	10	0	275	55·6	54·8	0·8			0·0	0·0		W by N.	7·0
	18	0	29·411	50·6	48·4	2·2			0·4	0·1	SW.		0·5
	20	0	434	54·6	50·8	3·8	69·0		0·4	0·3	SW.	W : W by N.	0·5
	22	0	444	59·0	52·9	6·1	46·2		0·7	0·5	SW by W.	W by N : WNW ?	5·5
Aug. 5	0	0	458	62·0	55·0	7·0		0·150	0·8	0·2	SW by W.	WSW.	9·0
	2	0	455	63·1	56·0	7·1			1·1	0·8	SW by W.	WSW.	9·7
	4	0	447	63·1	56·6	6·5			1·4	1·1	SW by S.	WSW : W by S.	8·0
	6	0	432	57·8	53·0	4·8			1·9	0·7	SW.	SW.	10·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
20.	Scud.	W
22.	Cirrous scud and cirrous-edged cumuli.	B
0.	Scud.	B
2.	Cirrous scud ← masses of curled and flame-cirri, pointing from N.	B
4.	Cumuli to E. and S.; cirrous haze and linear cirri.	W
6.	Scud ← dense cirrous mass.	B
8.	Patches of scud: sky nearly covered with cirrous haze and linear cirri, dense to W., whence branch off fine parallel cirri; beautifully mottled and papillose cirri-like strings and masses of beads.	B
10.	Scud ← cirrous haze.	B
18.	Id.	W
20.	Id. ← dense cirrous clouds and haze.	W
22.	Id. ← id.; heavy rain.	B
0.	Id. ← id.; light rain.	B
2.	Thick mass of scud in ranges ← loose cirro-cumuli; occasional patches of sky.	B
4.	Scud.	W
6.	Id. ← cirro-strati to NE.	W
8.	Id. ← cirrous mass.	B
10.	Id. ← id.	B
18.	Id. ← dense cirro-stratus and haze.	W
20.	Id. ← id.	W
22.	Id. ← id.; light rain.	B
0.	Id. ← id.; id.	B
2.	Id. ← id.; id.	B
4.	Id.	W
6.	Scud and cumuli ← cumulo-strati on E. horizon.	W
8.	Patches of scud: moist-looking cirro-cumuli and woolly cirri ← sheets of cirro-strati; heavy showers with wind lately.	B
10.	Scud, cirro-cumulous scud.	B
18.	Thin scud ← thick cirro-cumulous and cirrous mass; openings to SW. and N.; light rain.	W
20.	Scud, cirro-cumulous scud ← thick cirrous mass to N. and E.; woolly cirri to SW.; loose cumuli on N. and S. horizon.	W
22.	Cumuli and scud: cirrous scud: woolly cirri ← ranges of cumuli near horizon.	B
0.	Ranges of cumuli: cirrous scud, woolly cirri ← cumulo-strati to N.	B
2.	Loose scud and ranges of cumuli ← woolly cirri and cirrous haze to E.	W
4.	Scud and cumuli ← sheets of woolly cirri.	B
6.	Id.; the scud, thin below; cumuli in ranges and near the horizon, mixed with cirro-strati; to the NE. ragged castellated cumuli; varieties of cirri; a few drops of rain.	W
8.	Thick masses of woolly and brush cirri to W. moving slowly ← white cumuli, nimbi, and cumulo-strati.	B
10.	Scud ← cirri.	B
18.	Scud, moving slowly.	W
20.	Cirrous scud, moving slowly; slight shower.	W
22.	Woolly cirri or cirrous scud ← piles of cumuli near horizon.	B
0.	Cirrous scud and cumuli; showers around.	B
2.	Thick scud ← piles of cumuli on horizon; cirrous clouds and cumuli; heavy shower; one or two faint peals of thunder.	W
4.	Cirrous scud ← piles of cumuli all round the horizon.	W
6.	Scud; misty to N., E., and S.; electric-looking to W.; heavy shower.	W
8.	Id. ← cirrous scud; masses of loose scud lying low on Cheviot.	W
10.	Id.	B
18.	Masses of scud near the horizon.	W
20.	Patches of loose scud: masses of thin cirro-cumulous scud.	W
22.	Cirrous scud: sheets of woolly cirri ← ragged cumuli on horizon.	B
0.	Scud ← ragged cumuli on horizon.	B
2.	Id. ← id.	B
4.	Masses of cumuli: cirro-cumuli, undulated to S.	W
6.	Scud ← cirrous clouds, cirro-strati to E.; light rain.	W

Göttingen Mean Time of Observation.				BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Aug.	5	8	0	29·400	56·3	53·2	3·1			2·7	1·6	SW.	SW : WSW.	9·0
		10	0	395	52·8	49·0	3·8			3·2	0·6	WSW.	SW ?	0·8
Aug.	6	0	0	...	...	...	...	66·1 46·2		1·4				
		18	0	29·878	49·2	47·2	2·0			2·2	0·0		NW by N.	9·0
		20	0	884	53·9	51·7	2·2			0·1	0·0	SW by W ?		9·5
		22	0	866	62·4	58·1	4·3	64·9		0·0	0·0			10·0
Aug.	7	0	0	841	61·8	58·7	3·1	44·1		0·3	0·2	S ?	SW ?	10·0
		2	0	805	59·2	56·9	2·3		0·060	0·8	0·4	S by W.	SSW.	10·0
		4	0	766	60·7	57·8	2·9			1·5	0·5	SSW.	SSW : WSW.	9·8
		6	0	745	59·3	58·3	1·0			0·5	0·1	SW by S.	SW.	10·0
		8	0	766	61·5	60·2	1·3			0·6	0·6	SW.	WSW : W.	9·8
		10	0	803	61·5	60·5	1·0			0·3	0·0		WSW ?	10·0
		18	0	29·862	57·7	57·7	0·0			0·1	0·0		SW ?	10·0
		20	0	882	57·7	57·7	0·0			0·0	0·0			10·0
		22	0	870	60·8	60·1	0·7	65·1		0·0	0·0			10·0
Aug.	8	0	7	854	64·3	63·5	0·8	56·3		0·0	0·0		SW by S.	10·0
		2	0	842	68·6	65·0	3·6		0·171	0·4	0·0	SW.	SW.	10·0
		4	0	822	66·0	62·6	3·4			1·5	0·1	SW by S.	SW by S.	9·8
		6	0	798	64·3	61·3	3·0			1·5	0·8	SW by S.	SW by S : SSW.	9·8
		8	0	811	57·0	56·8	0·2			1·3	0·0			10·0
		10	0	827	56·5	56·0	0·5			0·0	0·0			9·8
		18	0	29·857	53·2	52·0	1·2			0·0	0·0		SW by S.	9·0
		20	0	869	56·8	53·0	3·8			0·0	0·0		SW by S.	7·0
		22	0	879	58·8	54·9	3·9	70·2		0·0	0·0		WNW.	3·0
Aug.	9	0	0	879	62·3	56·3	6·0	52·1		0·0	0·0		WNW : SSW.	5·0
		2	0	880	65·2	57·0	8·2		0·067	0·0	0·0		WNW : SW.	4·0
		4	0	857	66·3	56·3	10·0			0·0	0·0		W.	4·0
		6	0	846	63·2	56·7	6·5			0·1	0·0		W by S : SW.	3·5
		8	0	863	58·3	56·0	2·3			0·1	0·1	NNE.	WNW : SSW.	4·0
		10	0	886	53·5	52·3	1·2			0·0	0·0	NNE.		7·0
		18	0	29·882	47·2	46·6	0·6			0·0	0·0		NNE.	0·8
		20	20	903	57·3	55·0	2·3			0·0	0·0		NE by E : NNE.	8·5
		22	0	916	58·6	54·7	3·9	69·5		0·0	0·0		N by E.	3·5
Aug.	10	0	0	926	62·2	55·6	6·6	43·9		0·2	0·1	NE by E ?	NNE.	4·0
		2	0	937	63·1	56·1	7·0		0·000	0·2	0·1	ENE.	NNE.	4·0
		4	0	934	63·1	54·9	8·2			0·2	0·1	ENE.	N by W.	1·8
		6	0	936	61·9	54·1	7·8			0·1	0·0			0·5
		8	0	949	56·8	53·6	3·2			0·0	0·0		SE : NW.	2·0
		10	0	973	53·1	52·1	1·0			0·0	0·0		WSW.	3·0
		18	0	29·986	50·4	49·7	0·7			0·0	0·0		NNW : NNW.	9·5
		20	0	29·987	55·2	54·0	1·2			0·0	0·0		NNW.	10·0
		22	0	29·984	63·7	58·8	4·9	65·2		0·3	0·1	SW.	W ?	9·0
Aug.	11	0	0	30·000	66·0	60·8	5·2	45·2		0·7	0·3	SSW.	W.	10·0
		2	0	30·006	68·1	62·1	6·0		0·000	0·5	0·2	SSW.	W by S.	10·0
		4	0	29·990	66·4	61·2	5·2			0·2	0·1	SSW.	W by S : NNW.	9·9
		6	0	29·991	64·6	59·9	4·7			0·4	0·1	SW by S.	WSW.	9·0
		8	0	30·004	61·0	58·6	2·4			0·2	0·0		W by S : NNW.	9·5
		10	0	30·007	55·9	55·0	0·9			0·0	0·0			3·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
8.	Patches of scud : scud +— masses of cirri, cirro-strati to E.	B
10.	Id. +— cirro-strati to N. and S.	B
18.	Linear, woolly, and mottled cirri +— cirro-cumuli.	B
20.	Linear cirri and cirrous haze.	W
22.	Patches of scud on E. and S. horizon ; dense mass of cirro-stratus.	W
0.	Masses of scud +— thick cirrous haze ; light rain.	W
2.	Scud +— id ; a few drops of rain.	B
4.	Smoky scud : cirrous scud +— woolly cirri ; clouds breaking.	B
6.	Homogeneous scud ; occasional showers.	W
8.	Two currents of scud.	W
10.	Scud ; occasional showers.	B
18.	Scud, nearly homogeneous ; light rain, mist.	B
20.	Id., id. ; id., id.	B
22.	Homogeneous scud ; rain till 21^h 45^m.	W
0.	Two currents of scud +— cirrous haze.	W
2.	Scud ; raining towards Cheviot.	W
4.	Id. +— cirrous clouds.	B
6.	Scud, hanging in ragged curtains and dropping rain, moving quickly +— cirrous clouds.	B
8.	Thin scud, cirrous clouds ; showers ; scud low on Cheviot.	W
10.	Scud ; cirrous clouds.	W
18.	Woolly cirro-cumuli and cirro-cumulo-strati.	B
20.	Id. +— cirro-strati and linear cirri to NW.	B
22.	Scud and loose cumuli +— cirro-strati to E. and W. ; patches of mottled cirri.	W
0.	Cirrous-edged cumuli, moving very slowly, apparently acted on by different currents : feathered linear cirri to W. pointing from SSW. +— cirro-strati to SE.	W
2.	Cirrous-edged cumuli, as before : masses of cirro-cumuli, rather large at the middle and getting gradually smaller, till at the edges they become small points almost indistinguishable from haze, the cirro-cumuli move faster than the cumuli +— cirro-strati and haze to SE.	W
4.	Ragged-edged cumuli from W., the edges near the zenith breaking into zigzag cirrous fragments, which move in various directions +— woolly cirri ; hazy to E.	B
6.	Ragged-edged cumuli as before : linear cirri, cirro-cumuli of all sizes, small cumulo-strati, &c. +— cumulo-strati ; cirrous haze to E.	B
8.	Cumuli and scud : beautiful ranges of cirro-cumuli to E., flame-cirri in zenith, mottled cirri to W. all lying from SSW to NNE.	W
10.	Cirro-cumuli, cirro-strati, and cirrous haze.	W
18.	Loose cumuli, the edges broken into patches which dissipate +— thick mass of linear cirri to E., range of small cumuli to NNE., heavy mist on the ground.	B
20.	Two currents of scud.	B
22.	Cirrous-edged cumuli +— patches of cirri.	W
0.	Id. and scud.	W
2.	Id.	W
4.	Ragged-edged cumuli, in ranges on S. horizon.	B
6.	Cumuli on S. horizon.	W
8.	Scud to S. and W. : flame-cirri to W. +— cumuli on S. horizon.	W
10.	Cirro-cumulo-strati ; a streak of hazy cirrus moving across the face of the moon.	W
18.	Cirro-cumulous scud : cirrous clouds over the sky, in uniform sheets having a sort of stratified form pointing from NNW. to SSE., the lowest portions of it becoming cirro-cumulous at the edges.	B
20.	Patches of scud +— homogeneous cirrous mass through which the sun is seen like a bright spot one-half his diameter : a bright strip to E.	B
22.	Linear cirri and cirrous haze +— cirro-strati near horizon ; patches of scud.	W
0.	Scud, moving slowly +— thick cirrous haze.	W
2.	Id. id.	W
4.	Scud : a dense mass of cirro-cumuli, moving slowly +— linear cirri and cirrous haze.	W
6.	Scud.	W
8.	Cirro-cumulous scud : flame and linear cirri +— cirro-strati to W.	W
10.	Cirro-cumulous scud, cirrous clouds and haze all deeply tinged with red at 9^h ; patches of cirro-cumuli.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0—10.
Aug. 11	18	0	30·023	49·1	49·0	0·1			0·0	0·0			0·1
	20	0	028	56·6	55·2	1·4	68·9 47·7		0·2	0·1	SW by S.	SW by S.	1·0
	22	0	024	61·6	58·4	3·2			0·6	0·2	SW.		0·3
Aug. 12	0	0	011	66·0	62·0	4·0		0·000	0·4	0·2	SW by S.	W by S.	0·5
	2	0	011	70·0	64·9	5·1			0·4	0·2	SW by S.	W by S : WSW.	4·0
	4	0	011	70·9	64·3	6·6			0·6	0·2	SW by S.	W.	4·0
	6	0	008	67·0	63·0	4·0			0·4	0·0		NW by W : W by N.	3·0
	8	0	026	60·9	59·3	1·6			0·3	0·0		W by S ?	3·5
	10	0	048	59·0	58·1	0·9			0·0	0·0		SW.	3·0
Aug. 13	0	0	...	...	...	...	71·5 47·4		0·0				
	18	0	29·908	48·0	47·1	0·9			0·3	0·0		W : SSE.	3·0
	20	0	910	53·9	52·9	1·0	75·3 43·3		0·0	0·0			0·3
	22	0	895	64·1	58·1	6·0			0·4	0·3	S.	SE ?	0·5
Aug. 14	0	0	891	67·7	59·8	7·9		0·000	0·9	0·5	S.	S ?	0·5
	2	0	870	70·2	62·3	7·9			1·0	0·4	SSE.	S and SSE.	2·0
	4	0	862	69·1	61·7	7·4			0·5	0·2	SSE.	S.	6·5
	6	0	865	64·7	59·6	5·1			0·3	0·1	SE.	S.	6·0
	8	0	869	57·4	55·4	2·0			0·3	0·0		SSW ?	6·5
	10	0	875	53·2	52·3	0·9			0·0	0·0		SSW ?	4·0
	18	0	29·835	54·0	53·4	0·6			0·0	0·0		NE by N.	9·0
	20	0	830	57·8	56·5	1·3	70·8 49·4		0·2	0·2	NE by E.	ENE.	10·0
	22	0	831	60·9	58·3	2·6			0·2	0·1	NE.	NE by E : SE.	9·0
Aug. 15	0	0	838	58·9	58·2	0·7		0·110	0·1	0·0	NNE ?	SE by E.	9·8
	2	0	824	60·8	58·7	2·1			0·4	0·3	NE.	NE : SE by E : ESE.	9·0
	4	0	811	61·6	59·5	2·1			0·8	0·6	ENE.	NE : S.	10·0
	6	0	793	61·0	59·0	2·0			0·4	0·2	NE.	NE.	10·0
	8	0	816	59·0	58·0	1·0			0·3	0·1	NE by N.		10·0
	10	0	835	58·7	58·2	0·5			0·2	0·0			10·0
	18	0	29·852	57·2	57·0	0·2			0·0	0·0			10·0
	20	0	865	57·9	57·2	0·7	63·6 55·7		0·0	0·0			10·0
	22	0	879	60·4	59·2	1·2			0·0	0·0			10·0
Aug. 16	0	0	887	64·7	62·0	2·7		0·032	0·0	0·0			10·0
	2	0	863	67·8	64·0	3·8			0·0	0·0			0·3
	4	0	851	69·0	64·7	4·3			0·2	0·2	NE by E.		0·3
	6	0	846	65·0	62·9	2·1			0·3	0·0			0·1
	8	0	863	60·3	59·8	0·5			0·2	0·0	NE.	NE.	10·0
	10	0	868	59·6	59·3	0·3			0·0	0·0			10·0
	18	0	29·873	56·4	55·9	0·5			0·0	0·0			10·0
	20	0	888	59·0	58·6	0·4	71·2 54·9		0·0	0·0			10·0
	22	0	894	64·1	62·5	1·6			0·0	0·0		SSW : NNW ?	5·0
Aug. 17	0	0	888	72·0	68·6	3·4		……	0·0	0·0			1·8
	2	0	885	68·4	67·1	1·3			0·5	0·0		SSW.	9·0
	4	0	884	73·0	67·9	5·1			0·0	0·0	WSW.	SW.	7·0
	6	0	884	71·3	67·8	3·5			0·1	0·0	NE.	SW : WNW.	9·0
	8	0	907	66·0	65·0	1·0			0·0	0·0		SW ?	4·0
	10	0	921	60·2	60·2	0·0			0·0	0·0			2·0
	18	0	29·915	54·1	53·6	0·5			0·0	0·0		SSW.	6·5
	20	0	925	59·0	57·6	1·4			0·0	0·0		SSW.	7·0
	22	0	912	64·7	60·7	4·0	77·1 51·5		0·0	0·0			0·1

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
18.	A patch of mottled cirrus to NW.; very hazy round horizon; heavy dew.	B
20.	Scud ← streaks of linear cirri to W.; hazy on horizon.	B
22.	Patches of clouds near horizon, loose cumuli on S. horizon, cirrous haze to NW.	W
0.	Patches of scud ← linear cirri to NW.; cumuli on N. horizon; cirrous haze round the horizon.	W
2.	Loose-edged cumuli: woolly cirri.	W
4.	Mottled, linear, hazy, and diffuse cirri ← ranges of cumuli on horizon.	B
6.	Scud: cirri, nearly as before.	B
8.	Scud, moving very slowly.	W
10.	Scud.	W
18.	Loose scud to S.: large cirro-cumuli.	W
20.	Patches of cirro-cumuli.	W
22.	Patches of cirri, moving slowly ← cirro-strati and haze near horizon.	B
0.	Small patches of scud, increasing ← cirri.	B
2.	Ragged-edged cumuli ← mottled cirri and cirrous haze.	B
4.	Large cirro-cumuli ← cumuli and scud on E. horizon.	W
6.	Cirro-cumuli ← linear cirri and cirrous haze; a bank of scud and loose cumuli on E. horizon.	W
8.	Varieties of cirri, lying in patches and sheets in all directions ← cirro-strati, the edges breaking into cirro-cumuli.	B
10.	Loose cirro-cumuli ← cirrous haze, cirro-strati.	B
18.	Thin smoky scud ← dense scud on E. horizon; cirro-cumuli and mottled cirri.	W
20.	Scud.	W
22.	Two currents of scud.	B
0.	Scud; heavy rain since last observation from the lowest scud, just ceased, that current having disappeared; cirrous haze.	B
2.	Thin smoky scud: cirrous scud: woolly cirri; heavy showers.	B
4.	Id., homogeneous: woolly cirro-cumuli seen at $3^h 30^m$.	W
6.	Scud, nearly homogeneous.	W
8.	Id., id.	W
10.	Homogeneous.	W
18.	Homogeneous, misty.	W
20.	Id., id.	W
22.	Id., id.	B
0.	Id., id.	B
2.	Pinnacle-cumuli to S.; hazy on horizon. The clouds broke up at 1^h.	B
4.	Id. id.	W
6.	Patches of clouds to S.; haze on horizon.	W
8.	Scud and mist came on rapidly about 7^h.	B
10.	Very thick mist.	B
18.	Thick mist.	W
20.	Id.	W
22.	Scud: patches of cirri; the clouds have just broken, the mist clearing off.	B
0.	Cauliflower and pinnacle-cumuli round the horizon except to NE.; a few patches of linear and radiated cirri. The vane still points NE. About 1^h the cumuli to the W. began to break in cirrous edges, while patches of scud came up from S. or SW., the temperature having risen to 76° at $1^h 20^m$; at $1^h 45^m$ the sky became nearly covered with scud and nimbi, and rain began to fall; the wind also rose, blowing from WSW; the temperature fell to 69°.	B
2.	Scud, pinnacle and ragged cumuli and nimbi; light rain, heavy to NE. 3^h. Several peals of thunder from NE. and E., distant.	B
4.	Cirrous-edged, piled, and cauliflower cumuli, broken into cirrous scud ← linear cirri and cirrous haze.	W
6.	Scud: cirro-cumuli ← piles of cumuli on horizon in a sort of haze; electric-looking.	W
8.	Loose and pinnacle-cumuli ← linear cirri, cirrous haze round horizon; light mist falling.	B
10.	Linear cirri; mist.	B
18.	Scud ← cirro-cumulo-strati to W. and NW.; heavy dew.	W
20.	Id.	W
22.	Id.	B

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10
Aug. 18	0	0	29·893	70·1	66·4	3·7		0·032	0·0	0·0		SSW ?	2·0
	2	0	872	74·2	67·3	6·9			0·0	0·0		SE and SW.	2·5
	4	0	849	75·6	68·0	7·6			0·1	0·0	E.	SSW.	1·5
	6	0	825	72·4	65·6	6·8			0·2	0·1	SE by S.	S by W.	6·0
	8	0	828	66·6	63·9	2·7			0·1	0·0	SSE.		9·0
	10	0	823	63·0	61·0	2·0			0·0	0·0			10·0
	18	0	29·744	54·6	54·0	0·6			0·0	0·0			10·0 !
	20	0	727	57·6	57·0	0·6	78·7 52·1		0·0	0·0			10·0 !
	22	0	704	64·9	63·0	1·9			0·0	0·0			0·0
Aug. 19	0	0	675	72·6	67·4	5·2		0·000	0·0	0·0	SE by S.	S.	0·5
	2	0	636	76·0	66·0	10·0			0·2	0·1	SSE.	S.	2·0
	4	0	592	77·1	66·5	10·6			0·2	0·0		SW by S.	3·0
	6	0	553	74·6	66·0	8·6			0·3	0·1	SSE.		0·2
	8	0	543	69·0	64·9	4·1			0·1	0·0	SSE.		1·0
	10	0	521	64·9	62·0	2·9			0·1	0·0	SSE.		0·3
Aug. 20	23	15	29·486	...	...	...	78·7 51·8	1·411	0·5				
	18	0	29·686	45·0	43·6	1·4			1·1	0·0			2·0
	20	0	686	49·9	47·8	2·1			0·1	0·0	WSW.	NNW ?	1·3
	22	0	675	56·1	52·7	3·4	64·7 41·0		0·1	0·3	SW by W.	WSW.	4·0
Aug. 21	0	0	656	60·6	55·8	4·8		0·000	0·3	0·1	WSW.	WSW.	8·8
	2	0	630	61·4	55·0	6·4			1·1	0·4	SW by S.	WSW.	9·8
	4	0	590	58·9	52·5	6·4			1·2	0·9	SW by S.	SW.	9·5
	6	0	526	57·1	52·0	5·1			1·0	0·5	SSW.	SSW : SW by S ?	9·0
	8	0	478	55·0	51·0	4·0			0·8	0·5	SSW.	SW by S.	10·0
	10	0	432	55·2	51·4	3·8			1·2	0·3	SSW.		10·0
	18	0	29·176	53·4	51·3	2·1			2·0	1·1	S.	S by W : SW.	9·7
	20	0	155	55·0	53·0	2·0	63·4 51·7		1·1	0·5	S,	S by W.	10·0
	22	0	107	56·6	54·9	1·7			1·2	0·5	S by E.	S by W.	10·0
Aug. 22	0	0	071	58·0	56·6	1·4		0·128	0·8	0·5	S.	S by W.	10·0
	2	0	075	58·3	56·6	1·7			1·9	0·1	SSW.	S by W.	10·0
	4	0	065	59·3	56·3	3·0			0·4	0·1	SW.	SW by W : S by W.	10·0
	6	0	069	58·5	54·6	3·9			0·7	1·3	SW.	WSW : S by W.	9·0
	8	0	098	54·2	52·2	2·0			0·3	0·0		SW.	8·5
	10	0	112	50·6	49·4	1·2			0·1	0·0			5·0
	18	0	29·164	44·8	44·0	0·8			0·0	0·0		SW.	0·5
	20	0	188	52·5	50·2	2·3			0·8	0·3	SW.	SW.	0·8
	22	0	224	56·0	51·7	4·3	61·6 40·3		1·9	0·8	SW by S.	SW : SSW.	3·5
Aug. 23	0	0	238	57·4	53·0	4·4		0·058	1·9	1·5	SW by S.	SW.	3·5
	2	0	265	61·2	53·7	7·5			1·7	1·2	SW by S.	SW.	3·0
	4	0	288	61·4	53·7	7·7			1·2	0·7	SW by S.	SW.	2·0
	6	0	311	58·5	52·1	6·4			1·5	0·3	SW.	SW.	0·5
	8	0	350	52·7	50·1	2·6			0·4	0·0			0·5
	10	0	381	47·7	47·0	0·7			0·0	0·0			0·3
	18	0	29·454	39·2	38·1	1·1			0·0	0·0		S.	1·5
	20	0	476	45·2	44·3	0·9			0·0	0·0	SW ?	SW ?	0·8
	22	0	498	54·4	52·7	1·7	62·4 36·5		0·0	0·0			1·0
Aug. 24	0	0	504	62·0	57·3	4·7		0·000	0·0	0·0		SW by S.	3·0
	2	0	513	67·6	59·0	8·6			0·1	0·0		S.	7·0
	4	0	520	67·7	57·9	9·8			0·2	0·1	SW.	S.	5·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	Misty cumuli round horizon, broken cirrous masses; very hazy to E.	B
2.	Loose cumuli; very hazy round horizon.	B
4.	Id.; milky haze near the horizon.	W
6.	Cirrous scud; very hazy near horizon.	W
8.	Cirro-cumulous scud; thick haze.	W
10.	Homogeneous.	B
18.	Thick fog, apparently no clouds above; heavy dew.	W
20.	Id., id.; the sun's disc faintly visible.	W
22.	Hazy on horizon.	B
0.	One or two patches of scud ← large masses of cumuli to W.; patches of light cirri to S.	W
2.	Woolly cirri in zenith ← cumuli with cirrous crowns to NW.; patches of cumuli; upper portion of a solar halo.	B
4.	Cirrous-edged cumuli ← hazy on horizon.	W
6.	Patches of clouds; cumuli to SE.; haze on horizon.	W
8.	A mass of pinnacle-cumuli to S.; cirro-strati to E.; cirrous haze and linear cirri round horizon.	B
10.	Cirro-strati to NW.	B
23.	A tremendous thunder-storm occurred during the night. The thunder was first heard about $12\frac{1}{2}^h$, the storm attained its height about 14^h when sometimes three bright flashes were seen in the course of as many seconds, the thunder occasionally rattling in half a second after the lightning: thunder was heard till about 17^h but distant. This storm was felt all over Scotland, many accidents occurred. 1·411 inch of rain has fallen since midnight.	
18.	Linear cirri, becoming cirrous haze to E.; cirro-strati to SW.	B
20.	A patch of cirrus ← cirro-strati and cirrous haze.	B
22.	Scud and loose cumuli.	W
0.	Id.	W
2.	Id.	W
4.	Dark scud and cumuli ← linear cirri to E.	W
6.	Scud: woolly cirro-cumuli ← rows of cirro-cumuli and cirro-strati; the sky has a very disturbed appearance.	B
8.	Cirro-cumulous scud ← cirro-cumuli in bluish cirrous haze.	W
10.	Scud.	W
18.	Thin smoky scud: cirro-cumulous scud, breaking in some places into the finest cirro-cumuli ← fine woolly cirro-cumuli and cirri; clouds of all tints from white to blue in frequent alternation.	B
20.	Scud ← a homogeneous mass; rain.	B
22.	Id. ← id. id.	W
0.	Id. id. id.	W
2.	Id. id. id.	W
4.	Id.: cirro-cumulous scud; cirrous haze.	W
6.	Dark, heavy scud to N.: cirro-cumuli and patches of cirri ← cumuli on S. horizon; raining to N.	W
8.	Id., black cumuli and a dark mass of cirrous-edged cloud ← cirro-stratus and haze on E. horizon; raining to SE. and here lately.	W
10.	Scud.	W
18.	A range of scud to S. ← cirrous-edged cirro-strati to E.; masses of cirri to S.	B
20.	Id. id. id.	B
22.	Masses of loose and ragged cumuli: sheets of mottled cirri, cirro-cumuli, and cirro-strati.	W
0.	Cumuli and cirrous-edged scud ← cirro-strati on E. horizon; a shower lately.	W
2.	Masses of cumuli.	W
4.	Id. ← patches of cirri to W.	W
6.	Id. ← cirrous haze to S.	B
8.	Scud and cumuli on N. horizon; cirro-strati and haze on SE. horizon.	W
10.	Clouds on W. horizon.	W
18.	Thick fog ← fine cirro-cumuli, linear cirri and cirrous haze to E., the sun's image well defined in it; heavy dew.	B
20.	Smoky scud ← large cirro-cumuli to W.; cirrous haze to E.	B
22.	A bank of cirrous haze to E.; patches of cumuli near the horizon.	W
0.	Loose detached cumuli ← cirrous haze on E. horizon.	W
2.	Loose cumuli and scud ← cirro-strati to S.; black to SE.; cirrous haze to E.	W
4.	Loose-edged cumuli and cirrous scud.	W

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.				Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.	Clouds moving from	
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.		.	0–10.
Aug. 24	6	0	29·533	65·2	58·7	6·5			0·4	0·2	S by E.	S.	6·5
	8	0	556	56·2	53·2	3·0			0·2	0·2	SSE.	S : WSW.	6·0
	10	0	565	52·7	51·8	0·9			0·1	0·0			6·0
	18	0	29·526	48·9	48·0	0·9			0·0	0·0		SSW.	8·5
	20	0	526	53·3	52 1	1·2			0·0	0·0		SSW.	3·0
	22	0	521	60·9	55·0	5·9	69·9		0·9	0·9	S.	S : SSW.	2·0
Aug. 25	0	0	501	64·6	57·3	7·3	47·1	0·000	1·9	1·2	S by W.	S by W.	5·0
	2	0	478	66·3	57·4	8·9			1·9	0·9	S.	S by W : S by W : SSW.	4·0
	4	0	484	63·2	56·8	6·4			1·8	0·4	S by W.	S by W.	9·5
	6	0	497	60·6	57·0	3·6			0·6	0·0		S by W.	9·9
	8	0	524	59·0	56·4	2·6			0·0	0·0		SSW : S by W.	6·0
	10	0	545	56·6	54·9	1·7			0·2	0·0	SW by S.		3·5
	18	0	29·608	50·2	49·8	0·4			0·0	0·0		SSW ? : SSW.	5·0
	20	0	622	53·2	51·8	1·4			0·0	0·0			1·0
	22	0	616	61·2	57·9	3·3	66·8		0·6	0·3	SSW.	SW.	5·0
Aug. 26	0	0	615	64·0	58·0	6·0	45·5	0·000	0·6	0·1	SW.	SW.	9·0
	2	0	605	65·2	59·0	6·2			0·4	0·1	SW.	SW.	8·0
	4	0	617	53·4	53·3	0·1			0·4	0·0	SW.	SW.	10·0
	6	0	626	53·7	53·4	0·3			0·3	0·4	WSW.	SW.	9·8
	8	0	650	50·9	50·3	0·6			0·4	0·0			2·5
	10	0	697	51·0	50·3	0·7			0·2	0·2	SW.		0·3
Aug. 27	0	0	...	...	...	...	66·6 42·8	0·330	0·8				
	18	0	29·705	46·8	46·5	0·3			1·4	0·0		WSW.	7·0
	20	0	662	52·0	50·8	1·2			0·0	0·0		WSW.	10·0
	22	0	617	60·0	56·3	3·7	64·1		0·6	0·6	S by E.	SSW.	9·7
Aug. 28	0	0	549	62·3	57·8	4·5	44·3	0·000	1·1	0·9	S by E.	S.	9·9
	2	0	485	61·2	57·9	3·3			2·9	1·4	S by E.	S.	9·9
	4	0	416	63·0	59·6	3·4			2·5	1·0	S.	SSW.	10·0
	6	0	379	62·9	60·0	2·9			1·7	1·4	S.	SSW.	10·0
	8	0	372	60·7	60·0	0·7			1·4	0·4	S.	S ?	10·0
	10	0	384	60·2	60·0	0·2			0·6	0·2	SW.		10·0
	18	0	29·561	50·7	49·4	1·3			1·3	0·2	WNW.		2·5
	20	0	617	52·0	49·4	2·6			0·4	0·1	WSW.		0·5
	22	0	668	55·9	51·1	4·8	65·0		0·4	0·1	WNW.	NW and NNW.	1·3
Aug. 29	0	0	702	58·1	51·5	6·6	49·1	0·105	0·5	0·3	NW by W.	W by N and NW.	3·0
	2	0	732	62·7	54·3	8·4			0·9	0·5	W.	W.	4·5
	4	0	753	63·1	54·8	8·3			0·8	0·1	W by N.	WNW.	4·0
	6	0	775	61·0	53·3	7·7			0·5	0·3	W.	WNW.	1·5
	8	0	802	55·3	50·3	5·0			0·3	0·2	WSW.	-	0·5
	10	0	848	48·8	46·9	1·9			0·0	0·0			0·0
	18	0	29·916	40·0	39·7	0·3			0·0	0·0			0·3
	20	0	931	46·4	45·3	1·1			0·0	0·0			0·3
	22	0	942	55·3	51·7	3·6	63·7		0·0	0·0		WNW.	2·0
Aug. 30	0	0	938	60·0	54·4	5·6	37·2	0·000	0·2	0 0	W.	W.	9·0
	2	0	938	64·2	56·7	7·5			0·2	0·0	SW ?	W by S.	8·8
	4	0	935	62·9	54·0	8·9			0·1	0·0	NNW.	W.	6·0
	6	0	943	61·2	54·5	6·7			0·0	0·0		W.	7·0
	8	0	941	54·6	52·0	2·6			0·0	0·0		SSW.	8 0
	10	0	963	51·0	50·0	1·0			0·0	0·0			6·0
	18	0	29·935	49·5	48·5	1·0			0·0	0·0		WSW.	10·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
6.	Cirrous scud and cumuli ⇷ linear cirri to S.; hazy to E.	W
8.	Scud and cumuli: thin cirrous haze and light cirri over most of the sky.	W
10.	Sky almost covered with thin cirrous haze and linear cirri; patch of scud to W.	W
18.	Cirro-cumulous scud and woolly cirri ⇷ thick mass of cirro-strati to E. and SE.; mist; heavy dew.	B
20.	Loose cirro-cumuli, mottled and feathered cirri, cirro-cumuli to E. having the appearance of a bridge ⇷ cirro-strati to E.; range of cumulo-strati to N.	B
22.	Masses of loose cumuli: sheets of cirro-cumuli ⇷ cirro-strati to E.	W
0.	Loose cumuli ⇷ patches of cirro-strati.	W
2.	Detached cumuli: cirro-cumulous scud: thin mottled cirri.	W
4.	Scud ⇷ thick mass of cirrous clouds; cirro-strati and cumuli to E.; a few drops of rain.	B
6.	Id. ⇷ id.; id.	B
8.	Loose scud near horizon: cirro-cumulous scud.	W
10.	Scud.	W
18.	Cirrous scud to W.: feathered and woolly cirri to S. ⇷ thick mass of linear cirri and cirrous haze to E.	B
20.	Cirri; haze to E.	D
22.	Scud and loose cumuli.	W
0.	Id. ⇷ cirrous clouds.	W
2.	Id.; dark scud to SW.	H
4.	Scud ⇷ thick cirrous haze. Thunder and heavy showers at 3^h.	W
6.	Id. ⇷ cumuli on S. horizon; heavy shower.	W
8.	Scud and cirrous clouds near horizon.	W
10.	Scud.	W
18.	Woolly cirri and large woolly cirro-cumuli ⇷ cirro-strati round horizon.	W
20.	Thick nearly homogeneous cirrous mass ⇷ cirro-strati to E.; a few drops of rain.	W
22.	Thick mass of cirro-cumulous clouds, scud and cumuli to S.; clouds breaking, sky to N. and S.; cirro-strati and cirrous haze to E. and S.	B
0.	Scud ⇷ dense cirrous mass.	B
2.	Id. ⇷ id.	B
4.	Id. ⇷ id.; black to N.	W
6.	Loose scud ⇷ cirrous clouds; a few drops of rain.	W
8.	Thin scud, nearly homogeneous; light rain.	B
10.	Id., id.; light rain; the wind blew 0·8 lb. in a few minutes after this.	B
18.	Scud and cirro-cumuli to SE.; cirro-strati on E. horizon; fine linear cirri to W.	W
20.	Cirro-strati to E. and to W. lying NE. to SW.	W
22.	Loose cumuli and scud ⇷ cirrous haze to E.	B
0.	Id. ⇷ id.	B
2.	Loose cumuli in detached masses which have an internal motion from NW. and W., the whole moving from W.	B
4.	Loose cumuli.	W
6.	Id.	W
8.	Cirrous haze to E.; patches of loose cumuli to E.	B
10.	Very clear, not a speck of cloud to be seen.	B
18.	Cirro-strati to N.; heavy dew.	W
20.	Linear cirri to E.; patches of clouds to E.	W
22.	Loose cumuli ⇷ linear cirri and cirrous haze to E.	B
0.	Loose cirro-cumulous cumuli.	B
2.	Id.	B
4.	Id.	W
6.	Id.; cirrous haze to W.	W
8.	Loose gray cirro-cumuli, scattered over the sky, which is quite milky.	B
10.	Id. id.	B
18.	Cirro-cumulous scud ⇷ cirrous clouds and cirro-cumuli.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0—10.
Aug. 30	20	0	29·965	53·0	51·1	1·9	67·9		0·0	0·0	W by N.		7·0
	22	0	972	56·7	53·0	3·7	48·0		0·0	0·0	W by N.	W by N.	4·0
Aug. 31	0	0	972	63·3	56·0	7·3		0·000	0·0	0·2	SW by S.	W.	8·5
	2	0	958	67·1	59·1	8·0			0·0	0·2	SW by S.	W ?	9·8
	4	0	950	67·0	59·8	7·2			0·2	0·0	WSW.		10·0
	6	0	953	62·7	58·4	4·3			0·2	0·0	SW by S.	SW by W.	10·0
	8	0	949	59·3	56·8	2·5			0·0	0·0	SW by S.		10·0
	10	0	961	58·1	56·2	1·9			0·0	0·0	NW by W ?		8·5
	18	0	29·999	55·3	54·4	0·9			0·2	0·0		W.	4·0
	20	0	30·027	58·3	57·6	0·7	71·3		0·2	0·0	SW by W.	W by N.	9·0
	22	0	30·059	65·4	62·6	2·8	53·3		0·1	0·0	WSW.	W by N.	9·8
Sept. 1	0	0	30·063	66·7	62·6	4·1		0·000	0·1	0·0		W.	10·0
	2	0	30·091	66·3	62·6	3·7			0·2	0·0		W.	10·0
	4	0	30·090	68·1	64·0	4·1			0·1	0·0		W.	10·0
	6	0	30·091	66·8	63·7	3·1			0·1	0·0		W.	10·0
	8	0	30·097	60·7	59·0	1·7			0·1	0·0		SSW.	10·0
	10	0	30·114	59·0	58·0	1·0			0·0	0·0			10·0
	18	0	30·073	60·0	58·2	1·8			0·2	0·1	WSW.	WSW.	10·0
	20	0	081	62·3	60·4	1·9	70·9		0·3	0·0		WSW.	10·0
	22	0	085	67·4	64·1	3·3	56·5		0·4	0·5	SW by W.	W by N : W.	9·0
Sept. 2	0	0	086	71·0	66·9	4·1		0·000	0·5	0·0		W.	9·0
	2	0	077	70·6	67·8	2·8			0·3	0·1	SW by W.	W.	10·0
	4	0	075	69·9	65·0	4·9			0·4	0·3	W by N.	W.	10·0
	6	0	070	68·1	63·1	5·0			0·5	0·0	W by N.	W.	8·0
	8	0	067	63·5	62·2	1·3			0·1	0·0	W by S ?	W.	3·5
	10	0	065	61·9	60·4	1·5			0·2	0·1	SW by W.	W.	2·0
Sept. 3	0	0	29·800	...	...	...	73·3 58·1	0·000	1·9				
	18	0	29·987	51·0	47·4	3·6			3·6	0·6	W by S.	WNW.	4·5
	20	0	30·017	53·9	52·9	1·0	70·5		0·6	0·4	WSW.	WNW.	6·5
	22	0	30·058	58·0	52·9	5·1	49·5		0·7	0·5	NW.	NW by W : NW by W.	6·5
Sept. 4	0	0	30·075	60·2	52·3	7·9		0·000	1·0	0·4	NW.	NW by N.	3·3
	2	0	30·092	62·2	53·1	9·1			1·0	0·5	NNW.	NNW.	1·5
	4	0	30·097	63·0	53·3	9·7			1·0	1·1	NNW.	NW by N.	1·5
	6	0	30·112	61·2	52·9	8·3			0·6	0·1		NW by N.	1·3
	8	0	30·145	55·5	51·0	4·5			0·4	0·1			0·3
	10	0	30·171	50·6	47·9	2·7			0·3	0·0	SW.		0·1
	18	0	30·199	39·7	38·6	1·1			0·2	0·0			0·3
	20	0	200	46·8	44·8	2·0	63·4		0·0	0·0			0·1
	22	0	189	53·4	49·9	3·5	36·8		0·0	0·0			0·1
Sept. 5	0	0	162	60·0	54·8	5·2		0·000	0·1	0·1	SW.		0·2
	2	0	139	65·9	59·1	6·8			0·1	0·0		NNW.	1·0
	4	0	111	68·2	58·9	9·3			0·4	0·2	NW by N.	NNW.	2·0
	6	0	101	65·2	58·3	6·9			0·4	0·2	NW by W.	NW.	6·0
	8	0	107	59·6	56·2	3·4			0·3	0·0			6·0
	10	0	088	57·1	55·6	1·5			0·0	0·0			8·0
	18	0	30·065	54·0	52·7	1·3			0·1	0·0	W ?	NW by W.	9·0
	20	0	065	59·0	57·2	1·8	68·6		0·1	0·0		NW by W.	7·0
	22	0	058	66·8	62·7	4·1	49·7		0·1	0·1	W by S.	NW : NW.	3·0
Sept. 6	0	0	048	72·2	66·0	6·2		0·010	0·1	0·0		WNW.	8·0
	2	0	038	71·2	65·0	6·2			0·7	0·0	W by S.	W by N.	8·0
	4	0	025	72·2	66·0	6·2			0·1	0·0	W by S.	W.	3·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
20.	Cirrous haze and linear cirri.	W
22.	Fine cirro-cumuli, becoming very small at the edges, lying in lines from NW.; linear cirri lying in different directions, chiefly from NW.; woolly and flame cirri, all moving slowly; cirrous haze to E.	B
0.	A few patches of woolly cirri or cirrous scud ? ← sky nearly covered with fine linear cirri and cirrous haze; solar halo.	B
2.	Thick large woolly cirro-cumuli ← cirrous haze to E.	B
4.	Thick cirrous haze and cirro-cumuli; cirro-strati round horizon.	W
6.	Thin scud, moving slowly ← thick cirro-cumuli and cirrous haze; slight rain lately.	W
8.	Thick cirrous clouds, black cirro-cumuli below; a little ago, sky seen with beautifully mottled and feathered cirri and cirro-cumuli.	B
10.	Cirrous clouds ?; sky in zenith.	B
18.	Cirro-cumulo-strati ← linear and mottled cirri to E.; cirro-strati on E. horizon; loose scud lying on Cheviot.	W
20.	Id. ← cirro-strati to E.	W
22.	Id. ← id.	B
0.	Scud ← thick cirrous haze and cirro-cumuli; cirro-strati on horizon.	W
2.	Id. ← cirrous clouds.	W
4.	Id. ← id.; loose cumuli on N. horizon.	W
6.	Cirro-cumulo-strati ← loose scud near horizon.	W
8.	Scud ← cirro-cumuli and cirrous haze; dark to E.; light rain.	B
10.	Scud and cirrous clouds.	B
18.	Scud ← thick mass of cirrous clouds.	W
20.	Id. ← id.	W
22.	Cirrous scud: woolly cirro-cumuli; cirrous haze.	B
0.	Scud ← cirro-cumuli and cirrous clouds.	W
2.	Id. ← id.	W
4.	Id. ← id.	W
6.	Id. ← id.	W
8.	Cirro-cumulo-strati and cirro-strati; cirrous haze to E.	B
10.	Scud ← cirrous haze.	B
18.	Beautiful strata of mottled, reticulated, and woolly cirri, the lines lying at right angles to the direction of the strata; patches of scud to SW.	B
20.	Sheets of thin, woolly, fretted, and cirro-cumulous cirro-strati, lying from WNW.; streaks of fine mottled cirri; cirrous haze; loose cumuli on Cheviot.	B
22.	Loose cumuli, agitated by different currents: large woolly cirro-cumuli to N. and E. ← cirro-strati to N. and E.	W
0.	Loose cumuli ← cirro-strati to N. and E.	W
2.	Id. ← id.	W
4.	Scud and loose cumuli ← cirrous haze to NE.	B
6.	Id. ← id.	B
8.	Cirro-strati to NE.	B
10.	Streaks of cirro-stratus to NE.	W
18.	A sheet of cirro-stratus to E.; heavy dew.	B
20.	A strip of cirro-stratus to NE.	B
22.	Id.	W
0.	Id.	W
2.	Sheets of cirro-cumuli and mottled cirri, cirro-strati ← cirro-strati and cirrous haze on NE. and N. horizon.	W
4.	Id., id. ← id. id.	B
6.	Id., id. ← id. id.	B
8.	Id., id.	W
10.	Thin scud, cirro-cumuli and cirro-strati; light shower; a lunar rainbow for a few minutes, quite complete.	W
18.	Cirro-cumulo-strati ← patches of woolly cirri above cirro-strati to E.	B
20.	Id. ← id.	B
22.	Masses of loose cumuli and scud to W.: sheets of cirro-cumuli and mottled cirri ← cirro-strati on horizon.	W
0.	Scud and loose cumuli ← cirro-cumuli; cumulo-strati on E. horizon; dark to SW.	W
2.	Cirro-cumulo-strati ← cumulo-strati to SE.; cirro-strati.	W
4.	Woolly cirro-cumuli, moving slowly ← cumuli on S. horizon.	B

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Sept. 6	6	0	30·018	68·7	64·4	4·3			0·2	0·1	WSW.	W by N.	3·0
	8	0	026	62·5	60·7	1·8			0·0	0·0		W by N.	7·0
	10	0	028	60·7	59·0	1·7			0·0	0·0			8·0
	18	0	30·040	44·1	43·0	1·1			0·0	0·0		WSW : W?	4·0
	20	0	056	52·3	51·0	1·3			0·0	0·0			0·5
	22	0	054	60·3	54·8	5·5	73·6		0·1	0·1	WSW.		0·3
Sept. 7	0	0	052	65·6	56·4	9·2	41·5	0·000	0·4	0·4	SW.		0·1
	2	0	039	69·0	59·0	10·0			0·4	0·3	SW by S.		0·1
	4	0	033	71·3	61·8	9·5			0·6	0·0	SW by W.		0·2
	6	0	027	68·0	61·0	7·0			0·3	0·0			0·4
	8	0	038	59·0	57·2	1·8			0·1	0·0			0·1
	10	0	048	54·2	53·3	0·9			0·0	0·0			0·0
	18	0	30·051	42·0	41·2	0·8			0·0	0·0			0·2
	20	0	055	49·3	47·8	1·5			0·0	0·0			0·1
	22	0	057	59·9	56·6	3·3	71·0		0·0	0·0			0·1
Sept. 8	0	0	051	71·5	63·2	8·3	40·5	0·000	0·1	0·1	SW.		0·2
	2	0	027	75·6	65·8	9·8			0·2	0·0	SW.		0·3
	4	0	009	76·3	65·0	11·3			0·0	0·0		WSW.	1·0
	6	0	000	73·6	67·8	5·8			0·0	0·0			0·5
	8	0	007	62·8	60·0	2·8			0·0	0·0			1·5
	10	0	017	56·6	54·9	1·7			0·0	0·0			3·0
	18	0	29·993	49·3	48·9	0·4			0·0	0·0			1·5
	20	0	30·006	52·0	52·0	0·0			0·0	0·0			2·0
	22	0	30·009	60·0	58·9	1·1	77·0		0·0	0·0			0·5
Sept. 9	0	0	29·985	69·3	64·0	5·3	47·4	0·000	0·0	0·0			0·2
	2	0	29·945	75·6	64·3	11·3			0·2	0·1	SE.		0·3
	4	0	29·923	76·0	63·8	12·2			0·6	0·2	SSE.		1·0
	6	0	29·915	70·9	60·8	10·1			0·3	0·1	SSE.		0·5
	8	0	29·922	62·3	58·4	3·9			0·3	0·0			0·3
	10	0	29·920	54·7	54·3	0·4			0·0	0·0			0·1
Sept. 10	0	0	...	...	...	...	76·7 46·4	0·000	0·2				
	18	0	29·675	57·9	57·4	0·5			0·3	0·0		SE.	9·0
	20	0	29·729	59·7	59·3	0·4			0·0	0·0		SE by S.	10·0
	22	0	29·763	62·0	61·2	0·8	71·0		0·2	0·1	NE by N.	NE : SSE.	6·5
Sept. 11	0	10	29·798	65·2	62·6	2·6	54·8	0·202	0·2	0·1	NE.	E : SE : SSE.	8·0
	2	0	29·832	68·3	64·6	3·7			0·2	0·1		WSW and NNW : SE by E.	10·0
	4	0	29·869	63·1	61·6	1·5			0·6	0·2	NE by N.		10·0
	6	0	29·904	61·8	60·5	1·3			0·3	0·1	NNE.	ENE.	8·0
	8	0	29·948	59·6	59·0	0·6			0·0	0·0			10·0
	10	0	30·002	57·2	57·1	0·1			0·0	0·0			10·0
	18	0	30·087	58·0	57·7	0·3			0·0	0·0			10·0
	20	0	124	57·9	57·6	0·3			0·0	0·0			10·0
	22	0	136	60·0	59·3	0·7	70·4		0·0	0·0		E?	10·0
Sept. 12	0	0	144	63·3	61·9	1·4	56·5	0·008	0·0	0·0			10·0
	2	0	133	67·7	64·3	3·4			0·2	0·1	ENE.	SSE and SE.	7·0
	4	0	117	64·6	61·9	2·7			0·5	0·3	ENE.		1·0
	6	0	110	64·7	61·2	3·5			...	0·2	ENE.		1·0
	8	0	131	59·3	58·7	0·6			0·2	0·1	ENE.	S.	9·5
	10	0	131	56·2	55·6	0·6			0·1	0·1 ?	ENE.		8·0
	18	0	30·086	47·0	46·6	0·4			0·0	0·0			3·0
	20	0	083	50·7	50·1	0·6			0·0	0·0			10·0
	22	0	069	55·2	54·7	0·5	72·2 44·9		0·0	0·0		SSE.	1·0

Sept. 9ᵈ 4ʰ. When the dry and wet thermometers were carried to the E. end of the Observatory the readings were 75°·8 and 62°·2.

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
6.	Woolly cirro-cumuli, moving slowly ← cirro-strati to E., sheets of cirro-cumuli.	B
8.	Id. ← cirro-cumulo-strati to W., cirro-strati.	W
10.	Cirro-cumuli ; a dark mass of cirro-cumulous scud to W.	W
18.	Fog on the ground : sheets of fretted woolly cirri.	B
20.	Diffuse cirri.	B
22.	Light cirri to N.	W
0.	Id. NE.	W
2.	Small patches of cirrus, thin cirrous haze on E. horizon.	W
4.	Diffuse cirri to NE.	B
6.	Id.	B
8.	Small patches of cirrus, cirrous haze to E.	W
10.	Beautifully clear.	W
18.	Patches of mottled and diffuse cirri, cirrous haze to E., fog, heavy dew.	B
20.	Id., id. id., id.	B
22.	Streaks of cirro-stratus to NE.	W
0.	A few patches of cirro-cumuli.	W
2.	Bundles of flame-like and curl cirri to N. and NW., cirrous haze on N. horizon.	W
4.	Curled, mottled, and flame-like cirri ; hazy on horizon.	B
6.	Pathes of cirrus, thick cirrous haze on S. and E. horizon.	W
8.	Id.	B
10.	Thin cirrous haze covering a great part of the sky.	W
18.	Patches of cirri ; thick fog and very heavy dew.	B
20.	Id. ; id. id.	B
22.	Id. ; cirrous haze on N. and E. horizon.	W
0.	Id. ; id.	W
2.	Id. ; id.	W
4.	Thin cirri forming ; id.	W
6.	Diffuse cirri ; brown haze to E.	B
8.	Cirri and cirro-strati to N. and NW.	W
10.	Streaks of cirri and cirrous haze to N.	W
18.	Cirro-cumulous scud ← loose scud ; rain during the night.	W
20.	Scud ← loose misty scud, very low, creeping along N. horizon.	W
22.	Thin smoky scud, very low, moving quickly, sometimes covering the whole sky : masses of woolly cirrous cloud or loose cumuli, moving slowly ← [streaks of mottled cirri.	B
0.	Thin scud : scud : woolly scud ← fine cirri.	B
2.	Smoky scud in two currents, lately : woolly scud ← cumuli to S.	B
4.	Homogeneous misty scud.	W
6.	Thin misty scud ← loose cumuli to SW. ; general haze.	W
8.	Thick misty scud.	W
10.	Id.	B
18.	Fog.	W
20.	Id.	W
22.	Homogeneous scud ; fog.	B
0.	Id. ; fog, distant.	B
2.	Woolly loose cumuli ; hazy.	B
4.	Loose cumuli on S. and E. horizon ; hazy on horizon.	W
6.	Loose cumuli and scud on E. and S. horizon ; hazy on horizon ; streaks of cirri to NE.	W
8.	Loose, ragged, detached, smoky scud.	B
10.	Id.	B
18.	Clouds near the horizon, thin fog, heavy dew.	W
20.	Thick fog.	W
22.	Loose cumuli, patches moving across the zenith evaporate ; clouds of mist rising from the ground to E.	B

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0—10
Sept. 13	0	0	30·036	62·1	58·4	3·7		0·000	0·1	0·1 ?	SSE.	SE ?	0·3
	2	0	29·995	65·9	59·0	6·9			...	0·3	SE by E.		0·3
	4	0	29·958	64·0	56·8	7·2			...	0·2	SE by S.		0·2
	6	0	29·936	59·6	55·6	4·0			0·5	0·2	SE.		0·2
	8	0	29·931	52·6	50·9	1·7			...	0·0			0·2
	10	0	29·910	47·8	46·8	1·0			...	0·0			0·1
	18	0	29·807	43·9	43·7	0·2			...	0·0		SE.	8·0
	20	0	798	50·0	49·6	0·4			...	0·0			10·0
	22	0	798	55·7	55·0	0·7	65·9 37·5		...	0·1	SE ?	NE.	1·5
Sept. 14	0	0	783	62·4	57·8	4·6		0·000	...	0·0	ENE ?	Various.	1·3
	2	0	757	65·6	59·1	6·5			0·4	0·3	ENE.	SSE : SSW.	4·0
	4	0	755	64·8	58·2	6·6			0·3	0·2	NE by E.	S.	7·0
	6	0	753	61·0	57·2	3·8			...	0·1	NE.	S.	9·0
	8	0	763	57·0	55·7	1·3			...	0·1	NE ?		10·0
	10	0	761	56·2	55·3	0·9			0·0	0·0			10·0
	18	0	29·753	55·9	55·3	0·6			...	0·2	NE.		10·0
	20	0	776	57·0	56·4	0·6			...	0·0			10·0
	22	0	773	59·9	58·5	1·4	65·8 53·5		0·4	0·3	NE.	NE.	10·0
Sept. 15	0	0	756	64·4	61·0	3·4		0·000	0·4	0·4	NE.	ESE ?	0·3
	2	0	733	67·9	63·2	4·7			0·6	0·5	NE by E.		0·2
	4	0	711	67·2	59·1	8·1			0·5	0·5	NE.		0·3
	6	0	717	63·0	58·0	5·0			0·4	...			2·0
	8	0	730	56·7	54·8	1·9			0·3	0·0	ESE ?		0·2
	10	20	745	51·8	51·2	0·6			0·2	0·0			0·2
	18	0	29·763	46·0	45·9	0·1			0·0	0·0			4·0
	20	0	783	49·6	49·3	0·3			0·0	0·0		S.	9·0
	22	0	782	58·2	57·0	1·2	68·8 45·3		0·1	0·0			1·3
Sept. 16	0	0	782	69·9	64·4	5·5		0·000	1·8	1·7	S by E.	S : S by E.	7·5
	2	0	767	71·9	63·4	8·5			1·3	1·2	S by W.	S : S.	5·0
	4	0	753	70·6	63·2	7·4			2·1	1·2	S.	S by W.	2·5
	6	0	774	67·0	62·2	4·8			1·3	0·0		S by W.	3·0
	8	0	797	59·2	58·8	0·4			0·0	0·0		S by W : S.	3·0
	10	0	831	55·6	54·9	0·7			0·0	0·0			0·8
Sept. 17	0	0	...	...	...	...	74·2 48·6		0·7		SSW.		
	8	+											
	18	0	29·758	53·8	53·7	0·1			0·7	0·0	SW by S.	SW : SSW.	9·0
	20	0	751	60·3	59·1	1·2			0·9	0·7	SW by S.	SW.	7·0
	22	0	762	63·3	59·0	4·3	69·1 47·1		2·1	1·8	SW.	SW by S.	7·0
Sept. 18	0	0	755	67·7	63·5	4·2		0·084	2·3	1·4	SW.	SW.	9·5
	2	0	773	66·1	62·6	3·5			2·7	1·3	SSW.	SW.	10·0
	4	0	827	59·2	56·7	2·5			1·1	0·1	W.	SW.	10·0
	6	0	858	59·6	56·1	3·5			0·1	0·1	W ?	SW.	9·5
	8	0	918	54·3	52·2	2·1			0·2	0·0			7·5
	10	0	951	50·3	49·1	1·2			0·1	0·0			2·5
	18	0	30·069	39·3	38·7	0·6			0·1	0·0			2·0
	20	0	093	43·4	43·0	0·4			0·0	0·0		SW.	4·0
	22	0	103	51·0	49·7	1·3	67·6 36·4		0·0	0·0		SW.	4·0
Sept. 19	0	0	095	59·7	55·1	4·6		0·040	0·0	0·0		SW.	8·0
	2	0	066	64·0	58·0	6·0			0·0	0·0		SW.	8·0
	4	0	037	66·2	59·9	6·3			0·2	0·1	ESE ?	SW.	9·5
	6	0	027	59·3	56·1	3·2			0·0	0·0		SW.	9·5

September 13d 7h—14d 23h. The suspending cord of the Anemometer weight having broken, the observations during this period were estimated.

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	Patches of loose cumuli; hazy to E.	B
2.	Id.; id.	B
4.	Cumulo-stratus on E. horizon.	W
6.	Scud and loose cumuli low on E. horizon.	W
8.	Id.	B
10.	Id.	B
18.	Scud.	W
20.	Thick fog.	W
22.	Thin scud, much of it having a rotatory motion +— loose-edged cumuli on horizon; mist rising from the ground to E.	B
0.	Loose cumuli moving from all directions between ESE. and SSW., breaking into ragged patches which vanish before reaching the Prime Vertical; mottled cirri and cirrous haze to S. and E.	B
2.	Cirrous scud: varieties of cirri +— cirro-strati to S.	B
4.	Cirro-cumuli, woolly cirri and cirrous haze +— patches of cumuli to N.	W
6.	Cirro-cumuli and thick cirrous haze +— patches of scud on E. horizon.	W
8.	Id. +— id.; red to NW.	B
10.	Homogeneous; a few drops of rain.	B
18.	Homogeneous.	W
20.	Id.	W
22.	Id.; foggy cloud.	B
0.	Patches of loose cumuli +— cirrous haze to W.	B
2.	Patches of scud to N. and of cirro-strati to S.	B
4.	Sheets of cirro-cumuli, mottled cirri and cirro-strati to S.; patch of scud to N.	W
6.	Large cirro-cumuli +— masses of scud on E. horizon; woolly and mottled cirri to N.	W
8.	Patches of cirro-strati and cirro-cumuli.	B
10.	Id.	B
18.	Foggy.	W
20.	Id.; linear and woolly cirri.	B
22.	Cirro-strati and linear cirri to N.	W
0.	Loose cumuli: cirro-cumuli and mottled cirri; cirro-strati on horizon.	W
2.	Loose cumuli: cirro-cumuli +— cirro-strati on E. and S. horizon.	W
4.	Id. +— haze on E. horizon.	W
6.	Id. +— id.	W
8.	Id. : cirro-cumuli.	W
10.		W
8 +	$17^d\ 8^h\ 20^m$—9^h. Much lightning was observed due south, frequent and bright flashes, but often faint; no clouds nor thunder.	B
18.	Thin scud: thick scud; clouds breaking; thick to E.; sky milky.	B
20.	Scud +— patches of cirro-strati.	B
22.	Id., moving rapidly +— patches of linear cirri; cirro-strati on S. and NE. horizon.	W
0.	Scud +— linear cirri.	W
2.	Id. +— id.	W
4.	Thick scud; occasional showers.	B
6.	Woolly cirri +— patches of scud and dark cirro-strati.	B
8.	Patches of scud; cirrous clouds.	W
10.	A faint aurora beyond clouds to N.; slight pulsations.	W
18.	Red cirro-strati to E.; rather thick fog; heavy dew.	B
20.	Feathered, diffuse, and crystallized-like cirri, moving slowly.	B
22.	Woolly and curled cirri, moving slowly +— large cirro-cumuli to S.; cirro-strati near horizon.	W
0.	Cirro-cumulo-strati +— linear cirri and cirro-strati.	W
2.	Cirro-cumuli, woolly cirri, and cirrous haze.	W
4.	Loose woolly cirro-cumuli.	W
6.	Id. +— woolly cirri.	B

Göttingen Mean Time of Observation.			Baro-meter Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Sept. 19	8	0	30·025	55·0	53·7	1·3			0·1	0·0	ESE.	SW.	7·5
	10	0	29·999	55·3	53·7	1·6			0·0	0·0			9·8
	18	0	29·899	50·3	49·9	0·4			0·1	0·0		SW.	9·0
	20	0	887	50·5	50·2	0·3	67·3		0·0	0·0		SW : SW.	2·0
	22	0	862	61·7	59·1	2·6	47·1		0·2	0·3	S by E.	SW : WSW.	3·0
Sept. 20	0	0	843	67·5	62·9	4·6		0·000	0·7	0·3	SW.	SW.	7·5
	2	0	809	66·1	61·3	4·8			0·7	0·6	SW.	SW.	8·5
	4	0	785	66·8	61·7	5·1			1·0	1·0	SSW.	SW by W.	5·5
	6	0	787	64·1	60·6	3·5			1·0	0·3	SW.	SW.	9·5
	8	0	784	59·0	57·6	1·4			0·5	0·2	SW by W ?		0·5
	10	0	790	59·3	57·8	1·5			1·2	0·3	SW.		1·0
	18	0	29·797	59·7	56·6	3·1			0·6	0·1		W by S.	9·5
	20	0	29·833	60·7	57·4	3·3	68·4		0·9	0·3	SW.	W.	9·8
	22	0	29·874	63·5	59·0	4·5	56·4		0·3	0·3	W.	W.	7·0
Sept. 21	0	0	29·908	64·3	58·0	6·3		0·000	1·0	0·7	NW.	W by N.	3·0
	2	0	29·935	63·4	56·5	6·9			0·9	0·5	W.	W by N.	2·0
	4	0	29·958	64·9	57·6	7·3			0·3	0·1		WNW.	0·5
	6	0	29·990	60·9	55·8	5·1			0·2	0·0			0·3
	8	0	30·042	51·1	50·1	1·0			0·0	0·0			0·0
	10	0	30·082	47·2	46·1	1·1			0·0	0·0			0·0
	18	0	30·190	41·9	41·8	0·1			0·0	0·0			0·1
	20	0	231	45·7	45·0	0·7	65·6		0·0	0·0		NE.	0·8
	22	0	264	52·4	51·0	1·4	38·6		0·0	0·0			0·0
Sept. 22	0	0	266	59·4	56·0	3·4		0·000	0·1	0·0	WNW ?		0·0
	2	0	250	66·2	59·3	6·9			0·0	0·0			0·0
	4	0	244	69·7	60·3	9·4			0·0	0·0			0·2
	6	0	264	64·1	60·3	3·8			0·1	0·0			0·2
	8	0	279	55·3	55·0 ?	0·3 ?			0·1	0·0	NE.		0·3
	10	0	301	51·0	49·7	1·3			0·0	0·0			0·0
	18	0	30·332	42·0	41·8	0·2			0·0	0·0			0·5
	20	0	347	45·5	45·0	0·5	69·4		0·0	0·0			0·5
	22	0	368	53·0	51·8	1·2	38·5		0·0	0·0			0·3
Sept. 23	0	0	354	62·8	59·0	3·8		0·000	0·0	0·0			0·3
	2	0	337	68·8	61·8	7·0			0·0	0·0		WNW.	0·5
	4	0	319	71·9	62·3	9·6			0·0	0·0			0·5
	6	0	294	66·1	62·0	4·1			0·0	0·0			0·2
	8	0	285	61·7	59·6	2·1			0·2	0·0	S ?		0·0
	10	0	303	55·2	54·2	1·0			0·2	0·0	S.		0·0
Sept. 24	0	0	30·285	...	...	...	71·5 51·5		0·1				
	18	0	30·110	48·9	48·8	0·1			0·3	0·2	NE by N.	NE.	10·0
	20	0	124	48·1	47·6	0·5	62·7		0·2	0·0	NE by N.	NE.	10·0
	22	0	135	48·0	45·3	2·7	45·3		0·7	0·4	N by E.	NE.	9·5
Sept. 25	0	0	112	50·0	44·6	5·4		0·058	0·8	0·9	N.	N : NNW.	8·0
	2	0	103	50·9	44·4	6·5			1·5	0·9	N.	N : WNW.	6·0
	4	0	086	50·1	44·6	5·5			2·0	0·5	N.	N.	9·8
	6	0	092	49·0	44·9	4·1			0·5	0·1	N by E.	N by E.	9·8
	8	0	077	46·0	42·9	3·1			0·2	0·0			8·0
	10	0	072	43·0	41·1	1·9			0·1	0·0			3·0
	18	0	30·002	44·2	40·9	3·3			0·4	0·2	NNW.	N by E.	9·0
	20	0	29·993	45·6	42·5	3·1	51·3		0·3	0·0	N by W.	N by W.	8·0
	22	0	29·983	47·5	43·0	4·5	40·8		0·4	0·3	NNW.	N by E.	9·0

	SPECIES OF CLOUDS, &c.	Observer's Initial.
h. 8.	Cirrous scud, woolly cirro-cumuli.	W
10.	Scud ; a lightish appearance to NNW., like aurora.	W
18.	Scud and loose cumuli, moving slowly ← cirro-strati ; sky hazy ; light mist.	B
20.	Patches of scud : feathered cirri.	B
22.	Id. : woolly cirro-cumuli ; haze on E. horizon.	W
0.	Loose cumuli and scud ← patches of linear and woolly cirri.	W
2.	Id. id.	W
4.	Scud.	W
6.	Id. ← cirrous clouds to N. ; cumuli on N. horizon.	W
8.	Masses of scud near horizon.	W
10.	Cirro-strati to N.	D
18.	Scud ← cirro-strati on E. horizon.	D
20.	Id. ← id.	W
22.	Id. ← feathered and woolly cirri.	W
0.	Cirrous-edged and loose cumuli ← varieties of cirri.	B
2.	Masses of scud ← cirri and cirro-strati to E.	W
4.	Loose cumuli ← cirro-strati to S.	D
6.	Cirro-strati on S. horizon ; cirrous haze on E. horizon.	B
8.	Clear.	B
10.	Id.	H
18.	A streak of cirro-stratus to NE. ; light mist.	B
20.	Cirrous scud to N. and NE.	B
22.	Clear.	W
0.	Id.	W
2.	Id.	W
4.	A few patches of hazy cirro-stratus to NNW.	B
6.	Id.	W
8.	Id.	W
10.	Clear.	W
18.	Cirro-strati on NE. horizon ; stratus in the valleys ; heavy dew.	B
20.	Mottled cirri and cirro-strati to N. and E.	B
22.	Streaks of cirro-strati to E.	W
0.	Hazy cirro-strati to E.	W
2.	Woolly and linear cirri ← hazy cirro-stratus on E. horizon.	W
4.	Patches of cirri ; haze to E.	W
6.	Id. to N.	W
8.	Clear.	W
10.	Id.	W
18.	Scud ; slight drizzle.	W
20.	Id. ; id.	W
22.	Id. ← cirro strati and cirrous clouds.	W
0.	Masses of scud to S. : woolly cirri ← cirro-strati to NE.	W
2.	Scud : cirro-cumuli and woolly cirri.	W
4.	Scud and loose cumuli ← cirrous clouds.	W
6.	Id. ← id.	W
8.	Scud and cirrous clouds.	W
10.		W
18.	Scud ← linear cirri and cirro-strati to NE.	W
20.	Woolly cirri and large cirro-cumuli ← heavy dense masses of cirro-strati all round the horizon.	W
22.	Scud.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Sept. 26	0	0	29·949	49·0	43·0	6·0		0·000	0·7	0·6	NNW.	NNW : N by E.	8·0
	2	0	914	52·7	45·4	7·3			1·1	0·4	N.	N.	9·0
	4	0	862	51·4	44·4	7·0			1·0	0·3	N by W.	N by W.	9·5
	6	0	809	49·7	43·0	6·7			0·3	0·1	NNW.	N.	10·0
	8	0	760	48·3	43·8	4·5			0·1	0·0			10·0
	10	0	730	46·7	45·2	1·5			0·1	0·0			10·0
	18	0	29·627	40·5	38·0	2·5			0·7	0·0		N : NW.	9·5
	20	0	606	43·9	40·9	3·0			0·6	0·2	NNW.	N by W.	6·5
	22	0	599	46·7	41·0	5·7	52·3		1·5	1·2	N by W.	N.	3·0
Sept. 27	0	0	585	49·3	43·9	5·4	38·4	0·005	1·6	0·4	N.	N by E.	9·0
	2	0	571	49·3	43·7	5·6			1·6	1·0	N by W.	N by E : N by E.	7·0
	4	0	568	48·6	44·0	4·6			1·4	0·6	N by W.	N by E.	4·0
	6	0	574	43·0	41·3	1·7			2·1	0·2	N by W.	N by E.	3·0
	8	0	582	43·2	40·9	2·3			0·9	0·1	N by W.	N by E.	3·5
	10	0	586	45·0	41·4	3·6			0·6	0·9	N by W.		8·5
	18	0	29·600	40·6	38·5	2·1			1·0	0·2	NW by W.	N by E.	6·5
	20	0	616	41·6	39·0	2·6			0·3	0·2	NW by N.	N by E.	4·0
	22	0	623	46·6	41·7	4·9	50·2		1·3	0·7	NW by N.		2·5
Sept. 28	0	0	623	48·1	42·2	5·9	37·7	0·012	2·4	2·2	N by W.	N.	4·0
	2	0	634	50·2	44·2	6·0			2·2	1·6	N by W.	N.	7·5
	4	0	629	51·1	44·9	6·2			1·8	0·8	N.	N : N.	9·8
	6	0	656	47·1	43·7	3·4			1·6	0·1	N.	N by W : N.	8·0
	8	0	685	44·3	42·0	2·3			0·2	0·0			8·0
	10	0	705	42·4	40·8	1·6			0·0	0·0			4·0
	18	0	29·741	35·0	34·4	0·6			0·1	0·0		NW.	6·5
	20	0	749	35·6	34·7	0·9			0·0	0·0		NNW.	5·0
	22	0	746	45·0	42·9	2·1	51·8		0·0	0·0		NNW.	9·0
Sept. 29	0	0	735	49·0	44·4	4·6	30·6	0·005	0·2	0·1	NW ?	W : NNW.	5·5
	2	0	694	53·1	47·8	5·3			0·3	0·5	SW by W.	W : NNW.	9·5
	4	0	683	51·8	47·7	4·1			0·5	0·1	W by S.	W by N.	10·0
	6	0	635	50·9	47·9	3·0			0·3	0·1	W.	W.	10·0
	8	0	614	49·9	47·2	2·7			0·6	0·2	SW by W.		10·0
	10	0	555	48·1	47·9	0·2			0·7	0·3	SW.		10·0
	18	0	29·385	53·9	52·7	1·2			1·5	0·0		WNW.	10·0
	20	0	428	56·0	54·3	1·7			0·1	0·0		NW by W : NW.	9·8
	22	0	468	60·0	56·8	3·2	54·2		0·3	0·4	W by S.	WNW : WNW.	5·0
Sept. 30	0	0	490	64·0	58·9	5·1	46·5	0·252	0·9	0·5	WSW.	NW by W.	7·5
	2	0	512	62·2	57·2	5·0			1·1	1·1	W.	WNW : NW by N.	7·0
	4	0	542	62·0	57·1	4·9			1·6	0·3	W.	WNW : NW.	8·0
	6	0	568	57·0	55·3	1·7			0·5	0·1	WNW.	WNW.	10·0
	8	0	563	55·1	54·9	0·2			0·2	0·1	SW.		10·0
	10	0	552	55·7	55·5	0·2			0·3	0·2	SW.		10·0
Oct. 1	0	0	...	...	...	...	64·5 54·0	0·404	1·3	0·7	SW.		
	18	0	29·626	51·1	47·9	3·2			2·4	0·5	WSW.	WNW : W by N.	4·5
	20	0	658	51·1	48·0	3·1			1·0	0·5	W.	W by N.	3·0
	22	0	671	54·3	49·0	5·3	65·4		1·6	1·6	W.	W by N : W.	2·0
Oct. 2	0	0	685	55·6	50·3	5·3	48·4	0·008	2·1	1·6	WNW.	W : WNW.	6·5
	2	0	695	57·6	50·9	6·7			2·4	1·3	W by N. v.	W by N : WNW.	8·0
	4	0	711	56·9	50·2	6·7			1·8	1·2	W by N.	W by N.	3·0
	6	0	731	52·1	47·6	4·5			2·0	0·8	W by S.		2·0
	8	0	777	49·3	46·5	2·8			0·7	0·1	WSW.	WNW : WNW.	7·0
	10	0	796	46·5	44·4	2·1			0·3	0·1	WSW.	WNW.	6·0

Quantity of Clouds.		Species of Clouds, &c.	Observer's Initial.
0–10.	h.		
8·0	0.	Two currents of scud.	W
9·0	2.	Scud ← cirro-cumuli and cirrous clouds.	W
9·5	4.	Id. ← cirro-cumuli; cirro-strati on horizon.	W
10·0	6.	Id. ← cirrous clouds.	W
10·0	8.	Id. ← id.	W
10·0	10.	Id.; slight drizzle at 9h.	W
9·5	18.	Scud: thin cirro-cumuli to S.	W
6·5	20.	Id.	W
3·0	22.	Large cirro-cumuli ← masses of scud near the horizon; cirro-strati on S. horizon.	W
9·0	0.	Scud and loose cumuli.	W
7·0	2.	Id.: cirri.	W
4·0	4.	Scud and cirrous-edged loose cumuli ← loose nimbus to E.; occasional slight showers.	W
3·0	6.	Id. ← loose cumulo-strati on E. and NE. horizon; nimbi to S. and SE.; passing showers.	W
3·5	8.	Scud; passing showers.	W
8·5	10.	Id.	W
6·5	18.	Id.	W
4·0	20.	Id.	W
2·5	22.	Scud and cirro-strati near horizon.	W
4·0	0.	Scud ← cirro-strati to S. and W.	W
7·5	2.	Scud and loose cumuli ← cirro-cumuli.	W
9·8	4.	Masses of scud: large cirro-cumuli.	W
8·0	6.	Id. id.	W
8·0	8.	Scud and cirro-cumuli.	W
4·0	10.	Scud.	W
6·5	18.	Scud ← linear cirri to NW. lying ENE. to WSW.; hoar-frost.	W
5·0	20.	Varieties of cirri ← cumulo-strati on E., and cirro-strati on S. horizon.	W
9·0	22.	Woolly and diffuse cirri with cirrous haze.	W
5·5	0.	Masses of scud: woolly and curled cirri.	W
9·5	2.	Id.: large cirro-cumuli.	W
10·0	4.	Scud.	W
10·0	6.	Id. ← cirrous clouds and haze.	W
10·0	8.	Id.; a few drops of rain.	W
10·0	10.	Heavy rain.	W
10·0	18.	Scud.	W
9·8	20.	Id.: woolly, linear, and mottled cirri.	W
5·0	22.	Id.: id.; cirro-strati on horizon.	W
7·5	0.	Scud and loose cumuli ← cirro-cumulo-strati to SW.	W
7·0	2.	Id.: cirro-cumuli ← linear cirri to E.; thick mass of cirro-strati to W.	W
8·0	4.	Id.: id. ← dense cirro-strati all round the horizon; woolly cirri.	W
10·0	6.	Dense homogeneous mass of cirro-stratus; light rain.	W
10·0	8.	Light rain.	W
10·0	10.	Raining rather heavily.	W
4·5	18.	Masses of scud to NW.: cirro-cumuli, woolly cirri and cirrous haze moving off.	W
3·0	20.	Masses of scud.	W
2·0	22.	Patches of loose scud: sheets of woolly cirri and cirro-cumuli ← cirro-strati to E. and S.	W
6·5	0.	Loose scud: cirrous-edged, very loose cumuli ← cirro-strati to S.	W
8·0	2.	Scud and loose cumuli: mottled and linear cirri.	W
3·0	4.	Scud and loose cirrous-edged cumuli.	W
2·0	6.	Masses of cirrous scud; loose cumuli on N. and S. horizon; patches of cirri.	W
7·0	8.	Scud: mottled cirri, causing an indistinct coloured lunar corona about 4° radius.	W
6·0	10.	Scud ← cirro-strati to S.	W

Göttingen Mean Time of Observation.				Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Oct.	2	18	0	29·797	47·6	45·5	2·1			0·5	0·1	WSW.	W by N.	9·0
		20	0	797	49·1	47·6	1·5			0·1	0·1	SW by W.	SSW : W.	10·0
		22	0	792	51·7	50·7	1·0	59·4		0·5	0·4	SW.	Sward : W.	10·0
Oct.	3	0	0	787	58·0	54·1	3·9	38·6		0·7	0·3	SW.	W.	9·8
		2	0	773	57·2	52·8	4·4		0·008	0·6	0·1	WSW.	W by N.	10·0
		4	0	766	57·9	52·7	5·2			0·6	0·2	SW by W.	W : NW by W.	9·8
		6	0	761	55·0	50·9	4·1			0·3	0·0		WNW.	9·8
		8	0	763	53·4	51·1	2·3			0·2	0·0	SW.		9·5
		10	0	767	51·9	50·1	1·8			0·1	0·0		WNW.	9·5
		18	0	29·780	50·3	50·0	0·3			0·1	0·0			10·0
		20	0	775	50·9	50·7	0·2			0·0	0·0			10·0
		22	0	773	59·9	57·2	2·7	58·4		0·4	0·7	W by N.	WNW.	9·8
Oct.	4	0	0	768	62·0	56·7	5·3	48·4		1·2	0·7	W.	W.	9·3
		2	0	761	63·5	56·9	6·6		0·030	1·1	1·7	W by N.	W.	7·5
		4	0	748	63·0	57·8	5·2			1·6	0·9	SW.	W : W.	9·0
		6	0	754	60·0	55·8	4·2			1·9	1·1	SW by W.	W.	9·5
		8	0	770	58·1	55·0	3·1			1·0	0·1	SW.	W.	9·8
		10	0	763	57·9	55·0	2·9			0·3	0·2	SW by S.	W.	8·8
		18	0	29·735	55·3	51·8	3·5			0·8	0·2	SW.	W.	10·0
		20	0	740	55·0	53·0	2·0			0·2	0·0		W.	10·0
		22	0	736	57·0	53·7	3·3	64·4		0·2	0·2	SW by S.	W by S.	10·0
Oct.	5	0	0	723	60·0	55·8	4·2	52·3		0·5	0·3	SW.	WSW.	10·0
		2	0	694	63·3	58·1	5·2		0·004	0·7	0·4	SSW.	WSW.	9·8
		4	0	664	61·0	55·6	5·4			0·6	0·2	SW.	WSW.	9·8
		6	0	640	58·1	54·8	3·3			0·6	0·2	SW.	SW.	5·0
		8	0	625	55·1	53·4	1·7			0·1	0·0		SW.	9·8
		10	0	578	55·6	53·6	2·0			0·1	0·1	SW.	SW ?	10·0
		18	0	29·316	58·0	54·9	3·1			0·9	1·4	S by W.	SW by S.	10·0
		20	0	276	55·9	54·0	1·9			1·9	1·1	S by W.	SW by S.	10·0
		22	0	237	58·1	56·8	1·3	65·0		1·0	0·3	SSW.	SW by S.	10·0
Oct.	6	0	0	196	60·0	57·9	2·1	54·5		2·2	1·7	SSW.	SSW : SW by S.	9·5
		2	0	170	61·7	58·1	3·6		0·029	2·7	1·6	SW by S.	SW by S.	10·0
		4	0	135	60·5	57·5	3·0			1·8	0·6	SW by S.	SW by S : SW by W.	9·8
		6	0	093	58·0	55·7	2·3			1·4	0·8	SW by S.	SSW.	10·0
		8	0	064	54·7	52·9	1·8			0·9	0·4	SW by S.	SSW : SW.	7·0
		10	0	034	53·9	53·1	0·8			1·5	0·3	SSW.	SW by S.	9·5
		18	0	29·031	52·7	51·7	1·0			0·8	0·2	SW by W.	W.	8·5
		20	0	070	54·6	53·0	1·6			1·0	0·2	SW.	W.	3·0
		22	19	081	57·9	54·3	3·6	63·0		1·0	0·5	SW.	W by S.	5·0
Oct.	7	0	0	096	58·4	53·7	4·7	49·4		1·6	0·6	SW.	W by S : W by S.	4·0
		2	0	099	61·6	53·1	8·5		0·182	2·6	1·8	SW.	W : W.	7·0
		4	0	081	58·0	51·6	6·4			2·8	2·0	SW by W.	W by S : W.	2·5
		6	0	062	53·9	49·6	4·3			2·4	1·1	SW.	W by S : W.	4·0
		8	0	049	52·5	49·9	2·6			1·1	0·2	SW.		10·0
		10	0	018	50·7	50·0	0·7			0·2	0·1	SW.		10·0
Oct.	8	0	0	...	...	...	...	62·4 46·0	0·253	2·3				
		18	0	30·228	39·3	38·8	0·5			3·8	0·0		W.	9·0
		20	0	229	43·0	42·7	0·3			0·0	0·0		WNW.	9·5
		22	0	241	48·1	46·3	1·8	51·8		0·0	0·0		NNW ?	9·9
Oct.	9	0	0	260	50·2	47·7	2·5	35·4		0·2	0·1	NNW.	NW by N.	10·0
		2	0	296	47·7	46·6	1·1		0·012	0·3	0·2	NE by N.	NNE.	10·0
		4	0	343	46·9	44·5	2·4			0·5	0·1	NE.	N by W.	10·0

Quantity of Clouds.		SPECIES OF CLOUDS, &c.	Observer's Initial.
0—10.	h.		
9·0	18.	Scud ← cirro-strati on E. horizon, tinged with red.	W
10·0	20.	A line of loose scud to SE.: scud ← cirro-strati to E.	W
10·0	22.	Smoky scud on E. horizon: scud.	W
9·8	0.	Scud, thick to N. ← cirro-cumuli and cirro-strati to S.	W
10·0	2.	Id. ← cirrous clouds and cirro-strati.	W
9·8	4.	Id.: woolly cirri, cirro-cumuli, cirro-strati, and cirrous haze.	W
9·8	6.	Cirro-cumulo-strati; cirrous haze.	W
9·5	8.	Dense mass of cirrous clouds and haze.	W
9·5	10.	Large cirro-cumuli ← cirro-strati on horizon.	W
10·0	18.	Scotch mist.	W
10·0	20.	Id.	W
9·8	22.	Two kinds of scud, one very thin.	W
9·3	0.	Scud ← cirro-strati to N.	B
7·5	2.	Id. ← cirrous haze to N.	B
9·0	4.	Id.: woolly cirri ← cirrous haze and cirro-strati to N.	B
9·5	6.	Id. ← cirri-like rolled masses of curls, and somewhat bentlike cymoid cirri, other varieties of cirri; [cirro-cumuli.	B
9·8	8.	Scud.	B
8·8	10.	Id., moving rather quickly.	B
10·0	18.	Id.	W
10·0	20.	Id.	W
10·0	22.	Id.	B
10·0	0.	Id.	W
9·8	2.	Id.	W
9·8	4.	Id.	W
5·0	6.	Id. and cirro-cumulo-strati.	W
9·8	8.	Id.	B
10·0	10.	Id.	B
10·0	18.	Scud ← cirro-strati on E. horizon tinged with red.	W
10·0	20.	Id. ← thick mass of cirrous clouds and haze; a shower since 18^h^.	W
10·0	22.	Id. ← id.; light rain.	B
9·5	0.	Two currents of scud; light rain.	B
10·0	2.	Scud ← cirrous clouds and haze; light rain.	W
9·8	4.	Id.: id.	W
10·0	6.	Id. ← id.	W
7·0	8.	Id.: cirro-cumuli.	W
9·5	10.	Id., moving quickly ← cirro-cumuli; occasional showers; heavy shower immediately.	W
8·5	18.	Id.	W
3·0	20.	Id. ← cirro-strati to S.	W
5·0	22.	Id. ← patches of cirro-strati.	W
4·0	0.	Id.: mottled and linear cirri ← patches of cirro-strati; raining to E.	W
7·0	2.	Scud and loose cumuli: mottled, woolly, and linear cirri.	W
2·5	4.	Id., in patches: woolly and curled cirri.	W
4·0	6.	A mass of scud: woolly and diffuse cirri and loose cirro-cumuli ← cirro-strati.	W
10·0	8.	Thick mass of diffuse cirri and cirrous haze; masses of scud and cirro-cumuli.	W
10·0	10.	Scud; thick cirrous mass; light rain.	W
9·0	18.	Scud ← woolly and diffuse cirri.	B
9·5	20.	Woolly cirrous scud.	B
9·9	22.	Id. ← cirrous clouds, cirro-strati and haze.	W
0·0	0.	Scud ← cumuli; cirro-strati to S.	W
0·0	2.	Id.	W
0·0	4.	Cirrous scud ← scud, lower.	B

Göttingen Mean Time of Observation.				BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Oct.	9	6	0	29·420	45·8	43·9	1·9			0·2	0·0		N by W.	10·0
		8	0	482	44·0	43·0	1·0			0·1	0·0			10·0
		10	0	543	43·9	42·9	1·0			0·0	0·0			10·0
		18	0	29·634	42·3	41·9	0·4	53·4 40·5	0·039	0·0	0·0			10·0
		20	0	632	42·2	41·9	0·3			0·0	0·0		NNW : NE ?	10·0
		22	0	619	44·9	44·6	0·3			0·0	0·0		ENE : W by S.	10·0
Oct.	10	0	0	595	44·0	43·4	0·6			0·0	0·0		S.	10·0
		2	0	559	47·6	45·7	1·9			0·0	0·0		W.	9·0
		4	0	511	45·7	44·7	1·0			0·1	0·0		W.	9·8
		6	0	481	42·1	41·5	0·6			0·0	0·0		W.	10·0
		8	0	443	39·1	38·8	0·3			0·0	0·0			10·0
		10	0	395	38·7	38·4	0·3			0·0	0·0			10·0
		18	0	29·122	40·0	39·9	0·1	49·1 36·5	0·420	0·0	0·0			10·0
		20	0	29·066	41·0	40·8	0·2			0·0	0·0		ESE.	10·0
		22	0	29·009	42·6	42·3	0·3			0·0	0·0		ESE.	10·0
Oct.	11	0	0	28·958	45·2	44·3	0·9			0·0	0·0		ESE.	10·0
		2	0	28·879	43·6	43·3	0·3			0·0	0·0		ESE.	10·0
		4	0	28·826	43·4	43·1	0·3			0·0	0·0		ENE ? : ESE.	10·0
		6	0	28·771	42·0	41·6	0·4			0·1	0·1	NE.	SE.	10·0
		8	0	28·755	42·1	41·5	0·6			0·2	0·2	NE.		10·0
		10	0	28·760	42·1	41·1	1·0			0·4	0·8	NNE.		10·0
		18	0	28·867	42·0	39·7	2·3	44·5 38·5	0·890	7·5	4·4	N by E.	N by E.	10·0
		20	0	28·949	40·7	40·1	0·6			5·3	1·8	N by E.	NNE.	9·8
		22	0	29·048	42·0	39·3	2·7			5·0	2·4	N by W.	N : N by E.	9·5
Oct.	12	0	0	29·126	41·8	39·0	2·8			4·3	2·1	N by W.	N.	9·0
		2	0	29·155	43·6	38·0	5·6			3·8	1·9	NW by N.	NW ?	2·5
		4	0	29·138	45·0	38·4	6·6			2·2	1·0	WNW.	NW ?	3·0
		6	0	29·140	42·0	38·3	3·7			2·1	0·9	W.		2·5
		8	0	29·210	34·6	33·3	1·3			2·8	0·0	NW by N ?		3·0
		10	0	29·232	33·5	30·2	3·3			1·2	0·5	NNW.		0·1
		18	0	29·309	31·3	29·9	1·4	45·0 28·3	0·012	2·4	0·2	W.		0·3
		20	0	311	32·3	30·2	2·1			0·3	0·2	SW by W.		0·2
		22	0	293	38·4	34·0	4·4			0·5	0·4	W by S.		0·2
Oct.	13	0	0	271	42·3	37·1	5·2			4·1	1·4	W.		0·8
		2	0	275	43·9	38·9	5·0			3·0	0·9	W.	NW by N.	9·5
		4	0	249	37·9	36·9	1·0			1·1	0·1	NW by W.	NW.	6·0
		6	0	273	37·9	35·9	2·0			0·4	0·0		NW ?	0·5
		8	0	288	35·9	33·1	2·8			0·5	0·3	NW by W.		2·0
		10	0	338	35·9	33·6	2·3			1·5	0·2	NW by W.		3·0
		18	0	29·502	34·0	32·6	1·4	45·3 32·5	0·077	0·8	0·2	NW by W.	NNE ?	0·3
		20	0	538	36·4	34·0	2·4			0·2	0·6	NW.	NNW ?	0·3
		22	0	562	41·0	37·4	3·6			0·4	0·2	NW by W.		0·3
Oct.	14	0	0	582	44·6	39·3	5·3			0·8	0·2	NNW.	NNW.	0·5
		2	0	587	45·7	40·1	5·6			0·5	0·2	NNW.	NNW : NW.	5·0
		4	0	588	44·6	39·0	5·6			0·3	0·0		NW.	4·0
		6	0	587	36·0	34·8	1·2			0·0	0·0		NW ?	5·0
		8	0	584	29·9	29·6	0·3			0·0	0·0			0·3
		10	0	580	28·4	…	…			0·1	0·0			1·0
Oct.	15	0	0	…	…	…	…	46·3 25·5		0·4				
		18	0	29·451	26·4	25·7	0·7	44·1 21·7		1·2	0·0		NW.	1·5
		20	0	452	26·0	…	…			0·1	0·0		NW.	3·0
		22	0	431	32·6	30·2	2·4			0·1	0·1	WSW ?	NW.	3·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
6.	Scud +— cirrous clouds.	B
8.	Id. +— id.	W
10.	Id.; a slight shower lately.	W
18.	Scud and cirrous clouds.	B
20.	Thin smoky scud: smoky scud on S. horizon +— woolly cirri; slight shower lately.	B
22.	Thin scud: thin cirrous scud and haze, moving slowly; slight shower lately.	W
0.	Scud; a few drops of rain.	W
2.	Loose cumuli and scud: cirrous scud.	W
4.	Black, ragged, loose, electric-looking cumuli along N. and S. horizon +— thick mass of woolly and linear cirri and cirrous haze; solar halo 22° radius.	B
6.	Sky covered with woolly cirri, patches of cirro-cumuli, thick cirrous haze +— masses of loose scud on horizon.	W
8.	Thick cirrous mass; heavy dew.	W
10.	Quite homogeneous.	W
18.	Homogeneous; light rain.	B
20.	Scud +— homogeneous clouds above; light rain.	B
22.	Id. +— id.; id.	W
0.	Id.; raining.	W
2.	Id.; id.	W
4.	Two currents of scud; heavy rain.	W
6.	Scud; breaking up a little to SE.; rain ceased at 5ʰ 15ᵐ.	W
8.	Homogeneous.	W
10.	Scud.	W
18.	Homogeneous smoky scud, the Moon seen through it; light rain.	B
20.	Scud +— woolly cirri.	B
22.	Loose scud: cirro-cumulo-strati +— cirro-strati to N.	W
0.	Two strata of scud +— patches of cirri.	W
2.	Patches of woolly cirri +— loose cumuli near horizon.	W
4.	Masses of cirro-strati +— scud and cumuli on N. and NE. horizon.	W
6.	Scud and loose cumuli all round the horizon.	W
8.	Scud; a shower of hail about 7ʰ.	W
10.	Small patches of clouds on horizon.	W
18.	A strip of cloud on E. horizon; sky very clear; ground covered with hoar-frost.	B
20.	Cumuli on E. horizon.	B
22.	Cumulo-strati and cirro-strati on NE. horizon; faint streaks of cirrus to SE.	W
0.	Cumulo-strati on E. and NE. horizon; masses of scud moving along N. horizon; cirro-strati to S.	W
2.	Scud and loose cumuli.	W
4.	Id. +— cumuli on E. and N. horizon; heavy shower of hail 15ᵐ since, passed off to S.	W
6.	Patches of scud +— piles of gray cumuli to SE.; blue haze and cirro-strati to E.	W
8.	Scud.	W
10.	Loose scud.	W
18.	Cirro-strati on horizon.	B
20.	Cirro-strati, moving slowly +— cumuli on E. horizon.	B
22.	Patches of cumuli and cirro-strati on E. and N. horizon.	W
0.	Patches of scud and loose cumuli +— cirro-strati to N. and S.	W
2.	Masses of loose cumuli: woolly, mottled, and linear cirri and cirro-strati.	W
4.	Cirri as before +— cirro-strati and cirrous haze on horizon; masses of cumuli.	W
6.	Scud to S. +— diffuse cirri over the sky; cumuli to E.	B
8.	Clouds to N.	W
10.	Cirrous clouds, much hoar-frost.	W
10.	An Auroral arch about 15° altitude, with bright streamers at the extremities and fainter ones within the arch.	
18.	Light cirri +— cumulo-strati to E.; cirro-strati to E. and NE.	W
20.	Mottled, woolly, and linear cirri, cirro-strati +— cirro-cumulo-strati to N.; cumulo-strati on E. horizon.	W
22.	Id. +— id. id.	B

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			1–10
Oct. 16	0	0	29·402	40·0	34·5	5·5		0·017	0·2	0·2	WSW ?	NW.	2·0
	2	0	370	41·3	35·7	5·6			0·2	0·0	WSW.	WNW.	5·0
	4	0	332	41·8	37·7	4·1			0·2	0·1	WSW.	W.	9·0
	6	0	304	35·1	34·3	0·8			0·2	0·1	WSW.	SSW.	10·0
	8	0	280	35·3	33·5	1·8			0·1	0·0	WSW.		9·8
	10	0	245	34·8	32·2	2·6			0·0	0·0			9·8
	18	0	29·208	36·4	34·7	1·7			0·4	0·1	NE.		10·0
	20	0	262	35·7	35·0	0·7			1·0	0·5	NNE.	NE by E.	10·0
	22	0	299	34·3	33·3	1·0	46·6 31·4		0·5	0·0		ENE.	10·0
Oct. 17	0	0	325	39·8	39·2	0·6		0·387	1·8	1·2	N by E.	ENE.	10·0
	2	0	371	35·8	35·5	0·3			3·1	1·4	NNE.	NNE.	10·0
	4	0	411	36·5	36·3	0·2			2·1	1·4	NNE.	NNE.	9·8
	6	0	465	37·2	37·0	0·2			1·8	0·3	N by E.		10·0
	8	0	515	37·2	35·0	2·2			1·7	1·6	N.		3·0
	10	0	571	35·1	32·8	2·3			1·7	0·6	NNW.	NNE ?	0·5
	18	0	29·688	28·8	...	...			0·9	0·0			0·5
	20	0	29·719	28·1	27·6	0·5			0·2	0·1	NW ?	N.	0·5
	22	0	29·768	36·2	32·2 ?	4·0 ?	39·9 27·2		0·1	0·1	NW ?		0·3
Oct. 18	0	0	29·808	39·7	35·7	4·0		0·333	0·4	0·2	N by W.	N.	1·3
	2	0	29·842	41·0	38·0	3·0			0·5	0·4	NNW.	N by E.	2·5
	4	0	29·878	43·0	39·4	3·6			0·2	0·1	N.	N by E.	6·0
	6	0	29·929	35·4	34·3	1·1			0·2	0·1	N.		1·0
	8	0	29·966	32·2	31·0	1·2			0·0	0·0			0·0
	10	0	30·014	30·3	29·6	0·7			0·0	0·0			0·0
	18	0	30·120	24·0	23·6 ?	0·4			0·0	0·0			0·3
	20	0	153	26·2	26·0 ?	0·2			0·0	0·0			8·0
	22	0	152	33·0	31·0	2·0	43·3 21·6		0·0	0·0		W.	7·0
Oct. 19	0	0	161	40·4	35·9	4·5		0·007	0·1	0·1	W by S.	WNW.	2·0
	2	0	124	44·4	39·3	5·1			0·3	0·2	W by S.		0·3
	4	0	110	44·7	39·8	4·9			0·4	0·4	WSW.		0·3
	6	0	107	39·6	37·2	2·4			0·3	0·1	SW.		0·5
	8	0	079	39·2	37·2	2·0			0·1	0·0			4·0
	10	0	061	37·2	36·0	1·2			0·0	0·0			1·0
	18	0	29·926	42·0	40·4	1·6			1·1	0·4	SW by W.		8·0
	20	0	890	45·3	43·4	1·9			0·6	0·5	SW.	W by S.	10·0
	22	0	880	47·2	45·2	2·0	45·1 35·5		1·1	0·2	SW by W.	W.	8·5
Oct. 20	0	0	858	49·4	47·1	2·3		0·000	0·8	0·2	SW by W.	W.	9·8
	2	0	815	50·5	47·5	3·0			0·9	1·0	SW.	W by S.	10·0
	4	0	753	50·9	47·9	3·0			1·5	0·3	SW by W.	WSW : WSW : W : NW ?	8·0
	6	0	703	48·1	45·6	2·5			0·7	0·1	SW.	SW.	10·0
	8	0	648	47·0	45·4	1·6			0·2	0·3	SW.	WSW.	3·0
	10	0	589	47·2	45·8	1·4			0·5	0·4	SW by S.		9·8
	18	0	29·428	47·0	46·8	0·2			1·6	0·0			10·0
	20	0	488	47·8	46·6	1·2			0·5	0·8	NW by N.	NW by N : W ?	9·8
	22	0	559	48·7	45·7	3·0	51·1 44·3		0·7	0·3	NW by W.	NW by N : W ?	9·5
Oct. 21	0	0	619	50·8	46·9	3 9		0·063	0·9	0·3	NW by W.	W by S.	7·0
	2	0	647	50·5	44·8	5 7			0·9	0·3	NW by W.	WNW.	7·0
	4	0	671	51·5	44·5	7·0			0·5	0·4	WNW.	WNW.	3·5
	6	0	684	44·1	41·1	3·0			0·3	0·0		WNW.	2·0
	8	0	711	41·2	39·2	2·0			0·1	0·0			1·0
	10	0	703	40·1	38·7	1·4			0·2	...	SW by W ?		4·0
Oct. 22	0	0	29·440	...	...	...	53·3 38·9	0·007	4·2	2·4	SW by W.		

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	Mottled, woolly, and linear cirri, cirro-strati ← cirro-cumulo-strati to N.; cumulo-strati on E. horizon.	B
2.	Cirro-cumulo-strati and woolly cirro-cumuli ← cumuli to E.	W
4.	Scud.	W
6	Id. ← cirrous haze.	W
8.	Cirrous clouds ?	B
10.	Id.; Auroral light to NNW ?	B
18.	Thick cirrous clouds; scud below to N.	W
20.	Scud ← cirrous clouds and haze; stormy-looking to SE.; a few drops of rain.	W
22.	Scud; rain, hail, and sleet.	B
0.	Id., id., id., id.; Cheviot white.	B
2.	Id.; heavy shower of hail and sleet from $2^h\ 0^m$ till $2^h\ 15^m$ when it began to snow.	B
4.	Id.; heavy showers of snow and rain since last observation; breaking to N.	W
6.	Cirro-cumuli and cirrous haze, stationary; scud and loose cumuli on horizon; showers.	W
8.	Scud; a few drops of rain.	W
10.	Scud to E.	B
18.	Cumulo-strati on E. horizon; cirro-strati to N.	W
20.	Cirro-cumulo-strati ← cumulo-strati on E. horizon.	W
22.	Well-defined cumulo-strati to NE.; cirrous-sided to E. and SE.	B
0.	Cumulo-strati, with cirrous crowns, or changing into cirro-strati or sheets of cirri.	B
2.	Loose and cirrous-edged cumuli ← cumuli, crowned with cirri and apparently falling in snow.	B
4.	Loose cumuli.	W
6.	Id. on E. and N. horizon.	W
8.	Clear.	B
10.	Id.	W
18.	Cirro-strati to E.	W
20.	Cirro-strati on E. horizon; cumuli in zenith.	H
22.	Woolly cirri ← patches of mottled cirri.	H
0.	Woolly, mottled, and linear cirri and cirro-strati.	W
2.	Cirro-strati to S.	B
4.	Cirrous haze and cirro-strati on N. and E. horizon.	W
6.	Id.	W
8.	Id.	D
10.	Id.	B
18.	Scud; cirro-strati, cirrous clouds and haze.	W
20.	Id. ← thick cirrous clouds and haze.	W
22.	Smoky scud ← sheets of faint woolly cirro-cumuli.	B
0.	Cirro-cumulo-strati and large woolly cirro-cumuli; cirro-strati on E. horizon.	W
2.	Scud ← cirrous clouds.	W
4.	Thin smoky scud: woolly cirro-cumuli: woolly cirri: mottled cirri.	W
6.	Scud ← cirrous clouds.	W
8.	Id. ← cirro-strati to N.	B
10.	Id.; light shower since last observation.	B
18.	Light rain.	W
20.	Patches of thin smoky scud, low: thick dark mass of cirrous clouds and haze.	W
22.	Id.: id.; sky to N. and W.	B
0.	Woolly cirro-cumuli and cirro-strati, moving slowly; sky to W. and N.	B
2.	Loose cumuli.	B
4.	Loose woolly cirro-cumulous cumuli.	W
6.	Scud to E. ← cirro-cumuli and cirrous haze to W.	W
8.	Haze near horizon; sky hazy.	B
10.	Cirro-strati scattered over the sky.	B

Göttingen Mean Time of Observation.			BARO-METER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Oct. 22	18	0	29·518	46·7	44·7	2·0			3·2	0·3	SW by W.		0·1
	20	0	574	49·8	46·6	3·2			0·4	0·3	SW. v.	W by N : WNW.	7·0
	22	0	595	50·4	46·0	4·4	58·0 44·5		2·6	1·0	W. v.	W by N : W by N.	8·0
Oct. 23	0	0	578	52·7	46·9	5·8		0·008	2·2	1·6	W by N. v.	W by S : WNW.	9·5
	2	0	565	51·6	46·6	5·0			4·7	2·0	WSW. v.	WSW.	10·0
	4	0	521	50·6	46·7	3·9			2·8	2·2	SW.	W by S.	10·0
	6	0	460	50·1	47·2	2·9			3·2	1·3	SW.	W by S.	10·0
	8	0	397	51·3	48·7	2·6			4·1	1·9	SW.	W by S.	10·0
	10	0	395	51·0	47·2	3·8			4·3	1·4	SW.		3·5
	18	0	29·312	44·0	41·7	2·3			3·2	1·0	SW.		10·0
	20	0	299	45·0	42·0	3·0			1·8	1·0	SW.	W : W ?	8·0
	22	0	289	46·9	43·4	3·5	54·1 43·1		1·7	0·4	SW.	W.	6·0
Oct. 24	0	0	266	45·1	44·2	0·9		0·054	4·2	1·0	WSW.	W by S.	10·0
	2	0	236	41·5	40·6	0·9			2·1	0·3	WSW ?		10·0
	4	0	173	42·9	41·3	1·6			0·3	0·3	WSW.	WSW.	9·3
	6	0	149	39·7	38·4	1·3			0·4	0·2	SW.	W by N.	6·0
	8	0	146	38·2	37·0	1·2			0·4	0·3	SW.		0·1
	10	0	149	33·3	32·1	1·2			0·6	0·0			0·0
	18	0	29·124	33·3	32·8	0·5			0·5	0·6	SW by W.		0·0
	20	0	137	31·7	31·2	0·5			0·7	...		W ?	0·3
	22	0	141	37·9	36·8	1·1	48·7 30·8		0·1	0·1	SW.	W by N.	2·5
Oct. 25	0	0	137	45·1	42·0	3·1		0·005	0·4	0·4	SW by W.	W by S.	3·5
	2	0	119	45·0	41·0	4·0			0·7	0·3	WSW.	W.	2·0
	4	0	122	45·7	40·7	5·0			0·6	0·6	SW by W.	W : NW.	3·0
	6	0	120	40·7	38·2	2·5			0·5	0·4	SW by W.		5·0
	8	0	122	37·3	35·6	1·7			0·3	0·1	WSW.		0·3
	10	0	127	36·3	35·0	1·3			0·2	0·1	WSW.		0·3
	18	0	29·181	29·8	...	...			0·3	0·0		NW.	1·5
	20	0	221	34·2	32·9	1·3			0·2	0·1	NW.	NNW ?	1·8
	22	0	241	40·2	37·1	3·1	47·7 28·1		0·5	0·4	NW.		0·3
Oct. 26	0	0	257	43·6	38·2	5·4		0·004	0·6	0·5	NW by W.	WNW.	1·5
	2	0	262	46·0	40·1	5·9			0·6	0·4	WNW.	WNW.	5·0
	4	0	283	41·8	37·9	3·9			0·4	0·0			1·0
	6	0	301	33·9	32·7	1·2			0·1	0·0			1·0
	8	0	329	28·3	27·9	0·4			0·0	0·0			0·5
	10	0	353	28·0	27·6	0·4			0·0	0·0			0·5
	18	0	29·363	25·7	25·3	0·4			0·0	0·0			0·0
	20	0	369	25·9	25·5 ?	0·4 ?			0·0	0·0			0·8
	22	0	367	32·0	30·7	1·3	46·1 23·3		0·0	0·0		WNW.	3·0
Oct. 27	0	0	331	42·8	40·8	2·0		0·005	0·4	0·2	SW by S.	SW : W by N.	8·0
	2	0	289	44·6	41·3	3·3			0·4	0·3	SW by S.	W ?	10·0
	4	0	252	43·2	40·8	2·4			0·5	0·1	S.	SSW ?	10·0
	6	0	216	41·0	37·1	3·9			0·8	0·5	S by E.		10·0
	8	0	179	36·7	35·0	1·7			0·6	0·0			7·0
	10	0	141	39·4	36·9	2·5			1·0	0·4	S by E.		5·0
	18	0	28·723	41·2	39·9	1·3			2·8	2·8	E. v.		10·0
	20	0	625	43·6	43·0	0·6			4·1	1·4	E by N. v.	E by S.	10·0
	22	0	522	45·9	45·2	0·7	45·4 35·7		2·7	2·0	E by N.	E by S.	10·0
Oct. 28	0	0	417	48·0	47·0	1·0		0·209	2·6	0·8	E.	ESE.	10·0
	2	0	423	45·1	43·0	2·1			1·5	0·8	E.	ESE.	9·9
	4	0	424	43·7	41·8	1·9			1·3	0·3	NE.	E by N : E.	9·0
	6	0	435	41·4	40·1	1·3			0·4	0·3	NNW.	N by E.	10·0
	8	0	485	40·0	39·3	0·7			0·7	0·7	NW by N.	N.	6·5
	10	0	558	41·7	40·7	1·0			1·6	0·8	WNW.		9·5

h.	Species of Clouds, &c.	Observer's Initial.
18.	Cirro-strati to E.	B
20.	Thin scud, moving quickly: diffuse, woolly, and mottled cirri and cirro-cumuli.	B
22.	Scud: woolly cirro-cumuli, woolly cirri and cirro-strati.	W
0.	Id.: woolly cirri.	W
2.	Cirrous scud +– cirrous clouds and haze.	W
4.	Scud +– cirri.	B
6.	Id.	W
8.	Id.	W
10.	Id.	W
18.	Homogeneous; a few drops of rain; wind in gusts.	B
20.	Thin smoky scud: strata of woolly and woven cirri and cirro-cumuli +– cirro-strati to E.	B
22.	Loose scud +– cirro-cumuli and cirrous clouds to S.	W
0.	Scud; a slight shower lately.	W
2.	Light rain.	W
4.	Scud +– cirrous clouds; a few drops of rain; occasional showers.	B
6	Id. +– cirro-cumulous scud to S.	W
8.		W
10.		W
18.	Streaks of cirro-strati to N. and SW.; hoar-frost.	B
20.	Patches of cirri +– cirro-strati to SE. and N.	B
22.	Woolly cirri +– id. S.; scud to W.	W
0.	Scud and loose cumuli +– patches of cirri and cirro-strati.	W
2.	Loose cumuli +– patches of cirri and cirro strati.	W
4.	Id.: woolly cirri, moving very slowly +– cumuli on S. horizon.	B
6.	Woolly cirri; patches of scud.	B
8.	Masses of scud. Much lightning without thunder seen about 8h 20m by Mr Rule, the land-steward.	W
10.	Patches of cloud.	W
18.	Cirro-strati, chiefly to N. and E.; hoar-frost.	B
20.	Sheets and patches of woolly cirri.	B
22.	Cirro-strati and patches of cumuli on E. and NE. horizon; a patch of cirrus to W.	W
0.	Loose cumuli to S. and on N. horizon.	W
2.	Loose cumuli.	W
4.	Masses of cumuli near horizon; cirrous haze to E. and S.	W
6.	Loose cumuli.	W
8.	Id.; very faint Auroral light, low on N. horizon.	W
10.	Auroral light to N., more distinct 10m ago, when it was an arch 8° altitude, stretching from NW. to N.; no Aurora was visible at 9h.	W
18.	Hoar-frost.	B
20.	Cirro-cumuli and linear cirri to SW.	B
22.	Cirro-cumuli, fine woolly linear, and mottled cirri +– loose cumuli on SE. horizon; cirrous haze on horizon.	W
0.	Masses of scud: large cirro-cumuli +– linear cirri and cirro-strati to E. and SE.; cirrous haze to S.	W
2.	Thick mass of cirrous clouds and haze, with thick linear cirri, the motion scarcely perceptible +– masses of scud to S. and SE.	W
4.	Patches of scud +– very thick woolly and diffuse cirri obscuring the sun.	B
6.	Very thick, homogeneous cirrous mass.	B
8.	Hazy clouds.	W
10.	Id.	W
18.	Very dark; light rain.	B
20.	Scud; light rain.	B
22.	Loose scud; drizzle; Scotch mist.	W
0.	Id.	W
2.	Scud and loose cumuli; breaking to E.	W
4.	Loose scud: woolly cirri +– diffuse cirri to W.	B
6.	Scud.	W
8.	Id.; occasional slight showers.	W
10.		W

Göttingen Mean Time of Observation			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Oct. 29	0	0	29·051	...	...	...	48·2 39·5	0·117	5·7	4·3	SW.		
	2	30	29·146	...	...	...			6·1				
	18	0	29·364	30·7	30·0	0·7			6·0	0·0			6·0
	20	0	355	30·0	29·4	0·6			0·0	0·0		SW by S.	9·5
	22	0	348	33·0	31·8	1·2	44·0 26·4		0·0	0·0			10·0
Oct. 30	0	0	317	35·7	32·6	3·1		0·007	0·0	0·0			10·0
	2	0	268	36·8	34·9	1·9			0·0	0·0			10·0
	4	0	219	36·9	36·0	0·9			0·0	0·0			10·0
	6	0	170	37·2	37·0	0·2			0·3	0·3	NE.	NNE.	10·0
	8	0	118	37·9	37·6	0·3			0·3	0·1	NNE.		10·0
	10	0	090	37·3	37·2	0·1			0·3	0·1	NNW.		10·0
	18	0	29·105	32·7	32·0	0·7			0·3	0·0			2·0
	20	0	175	31·0	...	...			0·1	0·0			0·5
	22	0	242	33·0	32·5	0·5	37·8 28·3		0·1	0·1	SW by W.		0·5
Oct. 31	0	0	280	39·0	37·7	1·3		0·452	0·3	0·3	SW by S.		0·5
	2	0	307	42·1	40·0	2·1			0·3	0·2	SW by S.	WNW : WNW ?	1·3
	4	0	332	41·8	40·0	1·8			0·2	0·0		WNW : SSW.	2·0
	6	0	363	34·0	33·6	0·4			0·0	0·0		SSW.	3·0
	8	0	373	29·0	...	...			0·0	0·0			1·0
	10	0	371	29·3	...	...			0·0	0·0		NE : SSW.	5·0
	18	0	29·411	28·6	28·1	0·5			0·0	0·0			3·0
	20	0	445	31·7	31·3	0·4			0·0	0·0		SE.	9·0
	22	0	495	32·4	32·1	0·3	44·2 26·3		0·0	0·0		SE by E : SE ?	8·0
Nov. 1	0	0	519	37·2	36·0	1·2		0·006	0·0	0·0		SE by E : S by W.	7·5
	2	0	530	42·1	40·4	1·7			0·0	0·0		S by E : S by W.	5·5
	4	0	551	42·8	40·7	2·1			0·0	0·0		S : S by W.	8·5
	6	0	579	36·7	36·4	0·3			0·0	0·0			5·0
	8	0	605	30·1	30·0	0·1			0·0	0·0		S by W.	5·0
	10	0	631	30·8	...	...			0·1	0·0		S ½ W.	9·0
	18	0	29·650	33·8	33·6	0·2			0·0	0·0			10·0
	20	0	660	33·8	33·5	0·3			0·0	0·0		S.	8·0
	22	0	679	37·7	37·5	0·2	44·0 29·5		0·0	0·0		W : SSE.	8·5
Nov. 2	0	0	687	42·5	42·4	0·1		0·010	0·0	0·0		S by E.	8·0
	2	0	664	44·0	42·3	1·7			0·0	0·0		S.	9·9
	4	0	647	44·0	42·8	1·2			0·0	0·0	ENE.	SE.	9·9
	6	0	640	41·9	41·2	0·7			0·0	0·0		SE.	10·0
	8	0	624	41·9	41·1	0·8			0·0	0·0		SE.	9·8
	10	0	604	35·4	35·4	0·0			0·0	0·0			0·2
	18	0	29·449	31·0	...	...			0·0	0·0			0·8
	20	0	431	33·1	32·8	0·3			0·0	0·0		SSE : SSE.	2·5
	22	0	404	36·5	36·5	0·0	45·4 27·6		0·2	0·0		SSE : S.	9·8
Nov. 3	0	0	367	39·7	39·5	0·2		0·003	0·2	0·0	W by S.	SSE : S.	10·0
	2	0	316	44·8	43·3	1·5			0·1	0·0		S by E : S ½ W.	7·0
	4	0	274	42·0	41·7	0·3			0·0	0·0		S by W.	3·0
	6	0	259	37·6	37·5	0·1			0·0	0·0		S.	4·0
	8	0	255	39·3	38·9	0·4			0·0	0·0		SW.	9·0
	10	0	244	41·0	40·6	0·4			0·1	0·0		SSW.	9·0
	18	0	29·107	48·7	47·0	1·7			1·7	1·4	SSE.		10·0
	20	0	124	48·9	47·2	1·7			2·4	0·8	SSW.	SSW : S.	9·0
	22	0	251	46·3	44·8	1·5	45·6 34·1		2·1	0·5	SSW ½ W.	SW ?	0·8

Nov. 3ᵈ 0ʰ 40ᵐ. New floss silk put upon the wet bulb thermometer, the other having become quite green.
Nov. 3ᵈ 20ʰ. The reading of the barometer is perhaps 0·05 inch too low.

Quantity of Clouds.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0–10.	h.	
6·0	18. Sky nearly covered with thin clouds and haze.	W
9·5	20. Loose cirro-cumuli, woolly cirri, and cirrous haze.	W
10·0	22. Dense cirro-stratus; patch of scud to SE.; patch of sky; light mist.	B
10·0	0. Homogeneous cirrous mass.	B
10·0	2. Id.; light rain.	B
10·0	4. Id.; id.	W
10·0	6. Scud ← homogeneous mass of clouds; light rain.	W
10·0	8. Light rain.	W
10·0	10. Continuous rain.	B
2·0	18. Clouds to SE.	W
0·5	20. Cirri and cirro-strati on E. horizon. A large flock of wild geese seen.	W
0·5	22. Id.	B
0·5	0. Id.	B
1·3	2. Loose cumuli to N. and W.: diffuse cirri.	B
2·0	4. Loose cumuli to S., lately covering the sky: light cirri, moving quickly ← cirrous haze and cirro-strati on E. horizon.	W
3·0	6. Woolly and diffuse cirri ← cirrous haze on horizon.	W
1·0	8. Cirro-strati to SE.	W
5·0	10. Large woolly cirro-cumuli: diffuse cirri, becoming haze.	B
3·0	18. Scud to E.	W
9·0	20. Cirrous scud, moving very slowly ← patches of cirro-stratus.	W
8·0	22. Loose cirro-cumulous cumuli: varieties of cirri, becoming haze to N. and E.	B
7·5	0. Cirro-cumulous scud: woolly, linear, flame, and diffuse cirri.	B
5·5	2. Id.: id.	B
8·5	4. Loose cumuli: reticulated and linear cirri.	W
5·0	6. Linear and diffuse cirri; loose cumuli round the horizon.	W
5·0	8. Large woolly cirro-cumuli ← patches of cirri.	W
9·0	10. Id.	B
10·0	18. Quite overcast; a streak of light to E.	W
8·0	20. Cirro-cumulo-strati ← cirro-strati to E.	W
8·5	22. Thin smoky scud: cirro-cumulo-strati.	B
8·0	0. Woolly cirro-cumuli ← cumuli on N. horizon; dark and hazy, with scud to E.	B
9·9	2. Scud.	B
9·9	4. Two strata of scud ← cumuli on E. horizon; haze on horizon.	W
10·0	6. Scud; slight fog.	W
9·8	8. Scud and loose woolly cirro-cumuli.	W
0·2	10. Patches of scud and cirro-strati on horizon.	B
0·8	18. Clouds on E. horizon. $18^h\ 28^m$. A meteor was seen moving from about 30° to the S. of the zenith towards E. by S., it disappeared at an altitude of about 10° above the SE. point of the horizon, leaving a narrow train of sparks; it was of a bright white colour, apparently about 10′ to 15′ in diameter (about the size of a cricket-ball): only about 30° of its course was seen.	W
2·5	20. Loose scud: cirro-cumuli and cirro-strati to E.	W
9·8	22. Thin scud: dense semifluid-like cirro-stratus over the sky.	B
10·0	0. Id.: id. See note below.	B
7·0	2. Scud: large woolly cirro-cumuli ← cirro-strati to E.	B
3·0	4. Woolly, mottled, and dense diffuse cirri ← cirro-strati on horizon all round; dark cirro-strati on E. horizon.	W
4·0	6. Loose cirro-cumuli ← diffuse cirri to W.; cirro-strati round horizon; slight fog on the ground.	W
9·0	8. Scud.	W
9·0	10. Sheets of cirrous haze or thin cirro-strati; lunar corona and portion of a halo.	B
10·0	18. Scud; dark to NW.	W
9·0	20. Loose scud: large woolly cirro-cumuli and woolly cirri.	W
0·8	22. Id. ← cirro-strati and cirrous haze to E.	B

Nov. $3^d\ 0^h\ 40^m$. Quite calm. A sound heard to E., gradually increasing in intensity, and then gradually subsiding, like a strong wind blowing through a mass of leafless trees. At 52^m Kelso town clock (4 miles distant) was heard *very distinctly* to strike 12 o'clock.

Göttingen Mean Time of Observation.				Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Nov.	4	0	0	29·310	53·2	48·9	4·3		0·008	1·4	1·1	SSW.	SW : SW by S.	2·5
		2	0	347	53·3	48·8	4·5			1·4	0·9	SSW.	SW by S.	4·0
		4	0	397	51·9	48·0	3·9			1·8	1·1	SSW ½ S.	SW by S.	3·0
		6	0	441	48·7	45·9	2·8			1·5	0·5	SSW.	SW by S.	7·5
		8	0	488	46·0	45·0	1·0			0·5	0·1	SSW.		7·0
		10	0	562	41·0	40·8	0·2			0·2	0·0	SSW.	SW : SW.	8·8
Nov.	5	0	10	29·779	...	...	...	54·5 30·8	0·029	0·1				
		18	0	29·347	48·7	47·5	1·2			4·5	0·8	SSW.	SSW ?	10·0
		20	0	361	48·3	47·0	1·3			2·8	1·0	SW ½ W.	W by S : WSW : SW.	9·0
		22	0	371	49·7	47·6	2·1	47·0 34·8		0·8	0·5	SW ½ W.	SW ? : SW by W.	4·0
Nov.	6	0	0	417	50·8	47·1	3·7		0·056	1·2	0·4	SW ½ S.	WSW : SW by W.	8·0
		2	0	441	50·7	45·9	4·8			2·0	0·9	SW.	W by S.	2·0
		4	0	484	48·3	43·1	5·2			1·7	0·9	SW by W.	W by S.	1·5
		6	0	526	42·9	41·0	1·9			1·0	0·3	SW.	WSW ½ W.	4·0
		8	0	511	43·1	40·9	2·2			1·7	0·9	SW by W.		0·5
		10	0	470	43·0	40·9	2·1			1·0	0·4	SW ½ S.		10·0
		18	0	29·082	44·2	43·2	1·0			3·3	0·0			10·0
		20	0	135	45·6	43·9	1·7			0·4	0·3	W by S.	WNW : WNW.	1·5
		22	0	190	46·2	43·1	3·1	51·4 40·7		1·4	1·0	W.	W ½ N.	2·0
Nov.	7	0	0	217	47·6	41·9	5·7		0·019	2·9	3·8	W.	W by N.	0·3
		2	0	257	45·3	42·2	3·1			4·2	0·5	WSW.	W.	2·0
		4	0	277	43·3	41·3	2·0			1·7	1·7	WSW.	W.	7·0
		6	0	293	37·9	36·5	1·4			1·0	0·1	SW.	W ?	0·5
		8	0	286	40·8	39·2	1·6			1·6	0·2	SSW ½ W.	W by S.	8·0
		10	0	249	41·0	39·6	1·4			1·0	1·1	SW.	W.	5·0
		18	0	29·152	36·0	35·7	0·3			2·9	0·1	SW.	WSW.	9·3
		20	0	174	36·2	34·4	1·8			0·6	0·3	W by S.		0·3
		22	0	189	37·3	34·9	2·4	48·5 34·0		0·9	0·3	WSW.		0·3
Nov.	8	0	0	247	40·0	36·0	4·0		0·000	2·2	1·8	NW.	WNW.	1·0
		2	0	288	40·8	36·1	4·7			3·4	0·9	NW by N.	NW by N.	2·0
		4	0	356	37·6	33·0	4·6			3·0	0·6	NNW.		0·5
		6	0	435	34·4	31·0	3·4			1·2	0·8	NW by N.	NW.	0·5
		8	0	503	34·5	31·0	3·5			0·7	0·6	NW by W.		0·8
		10	0	578	34·0	30·4	3·6			1·8	0·2	NW by W.	NNW.	0·5
		18	0	29·693	31·3	30·7	0·6			0·7	0·4	NW ½ W.	N by W.	0·8
		20	0	722	30·0	29·1	0·9			0·6	0·1		NNW.	3·0
		22	0	717	30·0	...	...	41·2 27·5		0·2	0·1	WNW ½ N.	N by W.	3·0
Nov.	9	0	0	696	37·0	33·1	3·9		0·000	0·2	0·0		NW.	8·0
		2	0	631	37·6	33·6	4·0			0·0	0·0		NW : NW.	4·0
		4	0	568	35·2	32·7	2·5			0·2	0·0		NW.	9·8
		6	0	526	33·4	31·5	1·9			0·1	0·0	SSW ?		10·0
		8	0	458	33·9	32·0	1·9			0·0	0·0			10·0
		10	0	372	35·0	32·8	2·2			0·2	0·0	S by E.		10·0
		18	16	29·156	37·5	37·0	0·5			0·5	0·0	S ?		10·0
		20	0	175	37·2	37·1	0·1			0·0	0·0			10·0
		22	0	206	38·6	38·4	0·2	38·7 32·7		0·0	0·0		SSW.	9·8
Nov.	10	0	0	249	39·7	39·4	0·3		0·378	0·0	0·0			10·0
		2	0	300	39·7	39·4	0·3			0·0	0·0		E.	10·0
		4	0	335	40 9	40·5	0·4			0·0	0·0			10·0
		6	0	410	39·1	39·0	0·1			0·0	0·0			10·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	Scud in eddies turning to N.: cirrous-edged cumuli and cumulo-strati; a stratum of cumuli extending from SSW. to ENE., which is scud beneath moving in different directions; splendid solar rays cross the notches of the clouds reaching about 70° towards the zenith.	B
2.	Loose cumuli and scud ← ranges of cumuli.	B
4.	Id. ← id.	W
6.	Id.	W
8.	Id.; passing showers.	W
10.	Masses of scud, moving quickly: patches of mottled cirri.	B
18.	Scud.	B
20.	Id., moving very quickly: cirro-cumulous scud, moving very slowly: woolly, mottled, and diffuse cirri.	B
22.	Loose cumuli on NE. and S. horizons: large woolly cirro-cumuli.	W
0.	Scud: large woolly cirro-cumuli ← cirro-strati on E. horizon.	W
2.	Scud and loose cumuli.	W
4.	Loose cumuli to N. ← cumulo-strati on S. horizon.	W
6.	Scud ← cumuli on S. horizon; a few drops of rain.	W
8.	Cirri and patches of scud.	W
10.	Sky covered with thin misty scud; faint lunar halo shortly after this about 20° radius.	W
18.	Homogeneous scud; light drizzle.	B
20.	Thick scud, chiefly to E.: patches of cirro-strati to W.	B
22.	Scud and loose cumuli.	W
0.	Masses of loose cumuli.	W
2.	Masses of woolly cirro-cumuli and cirri ← loose cumuli and scud near S. and NW. horizon.	W
4.	Scud ← cirro-strati and cumuli on horizon; rainbow.	B
6.	Scud to W.	B
8.	Scud; occasional showers.	W
10.	Large woolly cirro-cumuli.	B
18.	Large thin woolly cirro-cumuli ← scud passed off to W. with light rain.	B
20.	Scud and cirro-strati on E. horizon.	B
22.	Cumuli on NE. horizon; loose cumuli on Cheviot.	W
0.	Loose cirro-cumuli and cirro-strati ← cumuli on NE. and SE. horizon.	W
2.	Cumulo-strati round horizon ← cirro-strati to S.	W
4.	Loose cumuli round horizon; a shower of snow ? passed along to the N. and E. half an hour ago.	W
6.	Masses of scud and loose cumuli.	W
8.	Loose cumuli.	W
10.	Patches of scud.	W
18.	Scud ← cirro-strati to E.	B
20.	Loosely mottled cirri and cirrous scud.	B
22.	Woolly, linear, and mottled cirri ← scud and loose cumuli to SE.	W
0.	Woolly cirri and loose cirro-cumuli ← patches of scud; cirro-strati on horizon.	W
2.	Woolly and flame cirri, cirrous haze and cirro-strati: lines of patches of cumuli to N.	W
4.	Thick woolly cirro-cumuli; when it became overcast about an hour ago, the clouds were very fine cirro-cumuli which gradually became thicker and larger; they radiate from NNW.; masses of cirri on E. horizon.	W
6.	Dense cirro-stratus.	B
8.	Nearly homogeneous.	W
10.	Thick mass of clouds; a few flakes of snow.	W
18.	Light rain.	B
20.	Id.	B
22.	Woolly cirri, cirrous haze and cirro-cumuli; moving very slowly ← loose scud and mist to N.	W
0.	Dense cirrous clouds; foggy.	W
2.	Id.; scud occasionally.	W
4.	Id.	W
6.	Id.	B

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Nov. 10	8	0	29·471	39·3	39·1	0·2			0·0	0·0			10·0
	10	0	524	38·9	38·8	0·1			0·0	0·0			10·0
	18	0	29·710	44·3	44·0	0·3			0·2	0·0	N ?		10·0
	20	0	766	44·0	43·3	0·7	41·6 37·5		0·3	0·1	NNW.	NNE.	9·5
	22	0	823	46·1	45·2	0·9			0·4	0·2	NE by N.	NNE : NNE.	9·8
Nov. 11	0	0	866	47·6	45·7	1·9		0·028	0·5	0·1	NNE.	NE.	10·0
	2	0	877	48·0	46·3	1·7			0·5	0·2	NE by N.	NE.	9·5
	4	0	917	45·6	43·8	2·8			0·3	0·0	NE by N.	ENE.	10·0
	6	0	941	43·4	42·0	1·4			0·1	0·0		ENE.	10·0
	8	0	957	42·8	41·7	1·1			0·1	0·0			10·0
	10	0	980	41·1	39·9	1·2			0·0	0·0		SSE.	8·0
Nov. 12	0	0	...	...	...	...	48·6 33·2		0·3				
	18	0	29·909	40·6	39·6	1·0			0·7	0·0		W.	9·8
	20	0	926	39·4	39·0	0·4	43·3 38·5		0·0	0·0		SW.	10·0
	22	0	956	39·0	39·0	0·0			0·1	0·0	SSW ?	SW.	4·0
Nov. 13	0	0	968	42·6	41·1	1·5		0·035	0·2	0·1	SSW.	SW.	1·5
	2	0	970	44·7	42·9	1·8			0·2	0·2	S by W.	WNW.	3·0
	4	0	971	41·4	40·0	1·4			0·2	0·1	S by W.	WNW.	0·3
	6	0	986	38·9	38·1	0·8			0·3	0·1	SW by S.	WNW.	6·0
	8	0	996	38·0	37·4	0·6			0·2	0·0			9·8
	10	0	995	37·1	35·9	1·2			0·3	0·1	SW ½ S.		0·5
	18	0	30·013	31·0	...	...			0·2	0·0		NW.	8·0
	20	0	045	30·3	...	...	47·2 28·5		0·0	0·0		NNE.	3·0
	22	0	073	35·0	32·7	2·3			0·2	0·2	N by W.		0·5
Nov. 14	0	0	091	40·8	38·1	2·7		0·000	0·3	0·2	N by W.	NE.	1·3
	2	0	092	42·0	39·0	3·0			1·0	0·5	N ½ W.	NNE.	3·0
	4	0	095	42·0	38·9	3·1			1·0	0·5	N by W.		...
	6	0	116	40·9	38·3	2·6			0·6	0·2	NNW.	N by E.	8·0
	8	0	145	32·8	32·2	0·6			0·3	0·0	NNW.		0·1
	10	0	143	34·2	34·0	0·2			0·0	0·0			8·0
	18	35	29·993	34·3	33·4	0·9			0·1	0·0			10·0
	20	0	961	36·9	34·9	2·0			0·2	0·2	SSW.	NNW.	10·0
	22	0	907	37·4	36·8	0·6	43·1 30·2		0·7	0·2	SW by S.	SW : NW.	10·0
Nov. 15	0	0	857	39·1	38·9	0·2		0·072	0·9	0·5	SW ½ W.	SW.	10·0
	2	0	757	37·6	37·3	0·3			2·2	1·6	SW ½ W.	SW.	10·0
	4	0	652	39·6	39·0	0·6			2·5	1·7	SW ½ S.	SW : W.	10·0
	6	0	616	42·4	41·8	0·6			3·8	0·8	WSW.		10·0
	8	0	661	43·0	41·3	1·7			0·7	0·7	NNW.		0·5
	10	0	746	38·4	36·9	1·5			0·9	0·0	N by W ?		0·5
	18	0	29·829	34·2	32·6	1·6			0·3	0·1	W.		0·3
	20	0	871	32·6	31·9	0·7	44·1 31·3		0·0	0·0		NNW.	9·8
	22	0	896	35·1	34·5	0·6			0·2	0·0		NNW ?	10·0
Nov. 16	0	0	880	39·8	37·9	1·9		0·200	0·1	0·0		NNW.	9·8
	2	0	837	42·7	40·5	2·2			0·1	0·0			10·0
	4	0	809	39·7	38·0	1·7			0·2	0·0		N by W.	3·0
	6	0	787	36·8	36·0	0·8			0·2	0·0			5·0
	8	0	726	38·0	37·5	0·5			0·1	0·0			10·0
	10	0	693	39·9	39·0	0·9			0·5	0·0	SW by S.		9·8
	18	0	29·381	47·6	45·7	1·9			3·0	4·0	SSW ½ W.		10·0
	20	0	339	47·8	46·8	1·0			2·9	1·0	SW by S.	SW.	10·0
	22	0	288	49·2	47·4	1·8	42·7 36·5		3·9	1·2	SSW.	SW by S : SW.	10·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
8.	Dense cirrous clouds.	W
10.	Id.	W
18.	Light rain.	B
20.	Thin scud.	B
22.	Id.: thicker scud.	W
0.	Scud.	W
2.	Id. and loose cumuli.	W
4.	Id.	W
6.	Id.	W
8.	Id.	W
10.	Cirro-cumulous scud.	W
18.	Thin scud ← large cirro-cumuli.	W
20.	Scud and large woolly cirro-cumuli.	W
22.	Loose large cirro-cumuli.	B
0.	Id.	W
2.	Loose cumuli.	W
4.	Patches of scud ← mottled cirro-strati to NW.; cirro-strati and cirrous haze on horizon.	W
6.	Scud and loose cumuli ← cirro-strati to NW.	W
8.	Sky to NW.; an Aurora seen beyond the clouds, no streamers or corruscations visible.	W
10.	The Aurora has disappeared.	W
18.	Scud.	W
20.	Thin cirro-cumulo-strati ← cumuli to E.	W
22.	Cumuli to E.; patches of scud to N. and S.	B
0.	Patches of scud ← cumuli to E.	B
2.	Scud and cumuli.	W
4.		W
6.	Scud and loose cumuli.	W
8.	Cirro-strati ? to N.	B
10.	Sheets of cirro-strati ?; faint Auroral light to NNW ?	B
18.	Homogeneous.	W
20.	Dense mass of cirro-cumuli lying in strata and ridges N. and S., moving very slowly; the clouds tinged with red to E.; in a few minutes the clouds to E. are of a very bright golden yellow, and slightly tinged with it all round the horizon.	W
22.	Gray scud to W.: a homogeneous mass of clouds, milky, cirrous, mottled, &c., cirrous scud.	B
0.	Patches of loose scud ← homogeneous mass of clouds above; light rain.	W
2.	Id. id. ; heavy rain.	B
4.	Two currents of scud; light rain.	W
6.	Scud; light rain occasionally.	W
8.	Scud ?	B
10.	Sheets of cirro-strati.	B
18.	Patches and streaks of light clouds.	W
20.	Cirro-cumulo-strati ← cirro-strati on E. horizon; red to SE.	W
22.	Dark, mottled, loose cirro-cumuli ← dense cirro-stratus.	B
0.	Large woolly cirro-cumuli ← large feathers of cirri; hazy to N. and E.; sky milky.	B
2.	Thick homogeneous mass of cirri; faint solar halo about 20° radius.	B
4.	Cirro-cumuli ← cirro-strati in thick cirrous haze on horizon.	W
6.	Cirro-strati and cirrous haze.	W
8.	Dark; light rain.	B
10.	Cirrous clouds and haze.	B
18.	Thick scud.	W
20.	Scud; a few drops of light rain.	W
22.	Thin scud: thick woolly cirro-cumuli; cirrous haze; blue cirro-strati reposing in the gray mass to E.; a few drops of rain.	B

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Nov. 17	0	0	29·234	50·9	49·0	1·9		0·037	2·5	1·4	SSW. v.	SW by S.	10·0
	2	0	189	50·6	47·7	2·9			2·0	2·3	SSW.	WSW.	4·0
	4	0	191	45·6	42·5	3·1			2·4	0·3	SW by S.	WSW.	0·8
	6	0	196	39·9	37·6	2·3			0·2	0·1	SW ?		0·3
	8	0	188	38·9	37·8	1·1			0·3	0·3	SSW.	W.	2·0
	10	0	167	37·9	37·2	0·7			0·3	0·2	SW by S ?		0·5
	18	0	29·087	37·0	35·4	1·6			1·4	0·4	SW.		0·0
	20	0	076	36·6	36·0	0·6			1·9	0·3	SW ½ S.	SW.	8·0
	22	0	070	37·7	37·0	0·7	51·0 32·4		1·6	0·4	SSW.	SW : SW by W.	2·5
Nov. 18	0	0	043	41·3	39·2	2·1		0·067	2·1	0·6	SSW.		1·5
	2	0	038	41·0	39·2	1·8			4·5	0·7	SSW.	SW.	4·0
	4	0	041	40·0	38·0	2·0			2·6	0·7	SSW.		0·5
	6	0	050	37·0	35·6	1·4			1·3	0·6	SSW.		4·0
	8	0	069	35·9	35·0	0·9			1·4	0·2	SSW.		0·1
	10	0	075	35·8	35·2	0·6			1·1	0·1	SSW.		0·8
Nov. 19	0?	0	29·35	…	…	…	41·9 30·3		0·8				
	18	0	28·987	41·7	41·0	0·7			2·6	0·1	E by N ?		10·0
	20	0	28·951	42·0	41·5	0·5			0·5	0·2	NNE ?	E.	10·0
	22	0	28·983	42·9	42·7	0·2	45·8 35·9		0·2	0·0		NW.	10·0
Nov. 20	0	0	29·065	39·6	38·9	0·7		0·146	5·1	1·7	NW.	NW.	10·0
	2	0	29·133	43·0	40·6	2·4			2·6	1·3	NW ½ W.	NW : W.	8·0
	4	0	29·197	42·8	39·3	3·5			2·5	0·9	W by N.		1·0
	6	0	29·235	39·8	37·0	2·8			0·7	0·3	W by N.		1·5
	8	0	29·233	36·0	35·0	1·0			0·3	0·1	SW ?		8·5
	10	0	29·183	40·3	39·8	0·5			0·1	0·0			9·5
	18	0	29·105	40·2	39·9	0·3			0·2	0·0		W ?	6·0
	20	0	29·115	42·2	41·8	0·4			0·4	…		W.	3·0
	22	0	29·142	42·0	39·9	2·1	45·1 35·5		1·0	0·2	SW ½ W.	W : W.	3·0
Nov. 21	0	0	29·158	42·9	41·0	1·9		0·020	0·5	0·5	SW ½ S.	W.	3·0
	2	0	29·155	42·3	40·9	1·4			0·3	0·2	SSW.	W by N.	9·0
	4	0	29·112	41·6	40·1	1·5			0·2	0·0			9·8
	6	0	29·046	41·0	40·1	0·9			0·2	0·0			10·0
	8	0	28·906	40·8	40·5	0·3			0·2	0·0			10·0
	10	0	28·738	50·0	49·8	0·2			3·6	3·8	SSW.		10·0
	18	0	28·658	46·3	44·2	2·1			6·2	1·2	SW by W.	W ?	3·0
	20	0	28·647	46·8	44·7	2·1			4·6	2·4	WSW ½ S.	WSW.	9·5
	22	0	28·706	46·0	44·1	1·9	51·5 39·4		4·1	1·6	SW by W.	W by S.	9·8
Nov. 22	0	0	28·788	44·3	40·8	3·5		0·460	7·2	3·2	NW. v.	WNW.	9·8
	2	0	29·060	44·9	40·9	4·0			4·3	2·5	NW ½ N.	WNW.	9·0
	4	0	29·158	42·7	38·8	3·9			2·0	1·7	W by S.	WNW.	0·8
	6	0	29·246	37·0	36·0	1·0			1·0	0·1	WSW.		0·3
	8	0	29·293	36·7	35·6	1·1			0·6	0·5	SW.		0·3
	10	0	29·302	37·8	36·3	1·5			0·8	0·6	SW ½ W.		0·2
	18	0	29·228	35·9	35·8	0·1			0·2	0·1	SW ?		2·0
	20	0	220	36·8	36·2	0·6			0·3	0·0	SSW ?	SW : S ?	10·0
	22	0	201	35·9	35·1	0·8	46·3 28·8		0·0	0·0		SW by S.	9·0
Nov. 23	0	0	180	38·7	38·1	0·6		0·007	0·0	0·0		SW.	9·8
	2	0	153	39·0	38·1	0·9			0·0	0·0		SW ?	10·0
	4	0	127	38·1	37·6	0·5			0·0	0·0			10·0
	6	0	139	36·9	36·3	0·6			0·0	0·0			10·0
	8	0	161	36·8	36·0	0·8			0·0	0·0			2·0
	10	0	184	33·0	32·9	0·1			0·0	0·0			2·0

h	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	Scud ← dense cirro-stratus; light drizzle.	B
2.	Id. ← fine feathers of beautifully mottled cirri pointing NNE.; cumuli and cirrous haze to E.	B
4.	Masses of loose-edged cumuli.	W
6.	Scud to W.; patches of cirri.	W
8.	Cirrous scud.	B
10.	Cirro-strati.	B
18.	Quite clear.	W
20.	Loose scud; light showers.	W
22.	Id.: diffuse cirri ← nimbi to S. with fine cirrous crowns; cirro-strati to E.	B
0.	Nearly as at $22^{\rm h}$; cumuli to E.	B
2.	Cirrous-crowned nimbi and scud, masses of woolly and diffuse cirri.	B
4.	Cumuli: nimbi and diffuse cirri on horizon.	W
6.	Thin scud; cumuli on horizon.	W
8.	A patch of scud to NW.; passing showers and masses of nimbi.	B
10.	Cirrous scud?	B
18.	Very dark; a few drops of rain.	B
20.	Scud; light rain.	B
22.	Id.; id.	W
0.	Id. ← homogeneous above; light rain.	W
2.	Lines of patches of loose scud: woolly cirro-cumuli and cirri ← loose cumuli to S.	W
4.	Cirro-cumuli, cirro-strati and cirrous haze to E.	B
6.	Scud to SW.	B
8.	Scud.	W
10.	Id.	W
18.	Id.	B
20.	Scud and nimbi; passing showers.	B
22.	Masses of scud and loose cumuli: fine cirro-cumuli ← cirro-strati on horizon; cumuli on Cheviot.	W
0.	Linear cirri and patches of cirro-cumuli ← thick cirrous haze and diffuse cirro-strati; masses of loose cumuli to NW.	W
2.	Thick, woolly, and diffuse cirri and cirrous haze ← mass of scud to NW.; cirro-strati on horizon.	W
4.	Thick, dense, cirro-cumulous mass, like a semifluid.	W
6.	Light rain.	B
8.	Rain; very dark.	W
10.	Light rain; the wind feels very warm.	W
18.	Scud.	B
20.	Id.; slight drizzle.	B
22.	Loose scud ← large cirro-cumuli to S.; slight shower.	W
0.	Scud and loose cumuli. At $23^{\rm h}\ 10^{\rm m}$ the wind had shifted to WNW. blowing from 4 lbs. to 7 lbs., varying much.	W
2.	Scud, loose cumuli.	W
4.	Id., id.	B
6.	Cirro-strati on horizon.	B
8.	Thin scud.	W
10.		W
18.	Sheets of cirrous scud? to E. and S.	B
20.	Woolly cirro-cumuli: woolly cirri.	B
22.	Woolly cirri and cirro-cumuli ← cirro-strati and cirrous haze.	W
0.	Cirrous scud, woolly cirri, and cirro-cumuli, all moving very slowly.	W
2.	Masses of scud ← thick cirrous mass.	W
4.	Dense cirrous mass.	B
6.	Id.	B
8.	Clearing off from SW.	W
10.	Clouds to E.	W

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0—10.
Nov. 23	18	0	29·253	28·3	28·3	0·0			0·0	0·0			0·3
	20	0	292	28·9	28·7	0·2	39·1		0·0	0·0		W.	4·0
	22	0	323	32·2	31·8	0·4	26·8		0·0	0·0		SW.	6·0
Nov. 24	0	0	346	34·2	33·7	0·5		0·004	0·0	0·0			3·0
	2	0	355	36·9	36·0	0·9			0·0	0·0		WSW.	9·0
	4	0	368	34·5	34·1	0·4			0·0	0·0		WSW.	7·0
	6	0	398	30·6	...	...			0·0	0·0		WSW.	2·0
	8	0	428	31·0	...	...			0·0	0·0			0·2
	10	0	460	34·0	32·6	1·4			0·0	0·0			10·0
	18	0	29·430	29·5	...	...			0·0	0·0			2·0
	20	0	429	29·8	...	...	37·1		0·0	0·0			10·0
	22	0	423	33·3	31·6	1·7	27·9		0·0	0·0			10·0
Nov. 25	0	0	390	34·3	33·6	0·7		0·006	0·0	0·0		W.	9·0
	2	0	383	36·7	35·6	1·1			0·0	0·0		S.	9·8
	4	0	387	35·3	34·7	0·6			0·0	0·0		W.	9·8
	6	0	364	30·2	...	...			0·0	0·0			2·0
	8	0	366	29·3	...	...			0·0	0·0			10·0
	10	0	339	30·4	...	...			0·0	0·0			10·0
Nov. 26	0	0	...	...	...	...	37·0 26·5	0·274	1·0				
	18	0	29·017	50·1	47·8	2·3			4·3	3·1	SSW.	SW ?	3·0
	20	0	004	49·9	47·8	2·1	52·6		4·4	2·4	SSW.	SSW.	9·8
	22	0	007	50·0	47·5	2·5	47·5		4·7	1·6	SSW.	SW.	9·0
Nov. 27	0	0	009	50·3	47·8	2·5		0·121	3·0	1·0	SSW.	SW.	8·0
	2	0	010	49·4	47·7	1·7			1·6	0·7	SSW.	WSW : SW.	9·8
	4	0	076	49·0	47·3	1·7			1·7	0·9	SW.	SW by W : W by S.	9·8
	6	0	133	48·9	46·9	2·0			2·0	1·5	SW ½ S.	WSW.	10·0
	8	0	199	48·8	46·6	2·2			1·8	0·7	SW.	W ?	8·0
	10	0	278	47·8	45·7	2·1			1·2	0·4	W by S.	W ?	1·3
	18	0	29·623	48·7	46·3	2·4			0·9	0·2	W.		9·0
	20	0	682	47·0	45·3	1·7	51·3		0·3	0·0		W.	7·0
	22	0	750	48·0	45·8	2·2	45·9		0·2	0·0	SSW ?	W.	9·8
Nov. 28	0	0	759	49·0	45·5	3·5		0·027	0·7	0·5	WSW ?	W.	10·0
	2	0	760	47·7	45·9	1·8			0·9	0·2	WSW ?	W.	10·0
	4	0	715	48·5	46·2	2·3			1·2	0·5	SW ½ S.	SW.	10·0
	6	0	633	49·6	47·6	2·0			1·0	2·7	SW.		10·0
	8	0	576	51·3	50·0	1·3			2·1	0·9	SW ½ W.		10·0
	10	0	656	49·7	45·0	4·7			4·7	2·7	WNW. v.		0·8
	18	0	29·824	46·7	42·0	4·7			4·5	3·0	WNW.		0·0
	20	0	29·866	45·1	41·5	3·6	52·0		4·2	4·1	WNW.	W.	0·3
	22	9	29·910	45·4	41·3	4·1	44·1		4·8	2·5	NW.		0·3
Nov. 29	0	0	29·932	46·9	42·2	4·7		0·008	4·7	4·3	NW ½ W.		0·3
	2	0	29·979	47·7	42·3	5·4			4·8	1·0	W by S ?		0·3
	4	0	30·044	45·6	41·4	4·2			1·4	0·1			3·0
	6	0	30·098	38·5	37·1	1·4			0·2	0·0			0·0
	8	0	30·141	37·0	36·0	1·0			0·1	0·0			0·3
	10	0	30·165	34·0	33·8	0·2			0·1	0·0			0·0
	18	0	30·106	33·0	33·0	0·0			0·0	0·0			6·0
	20	0	30·051	40·3	40·1	0·2	47·5		0·1	0·0			10·0
	22	0	30·013	43·8	43·2	0·6	28·5		0·7	0·0			10·0
Nov. 30	0	0	29·934	44·0	43·5	0·5		0·010	0·2	0·1	S by W ?		10·0
	2	0	29·850	47·9	47·1	0·8			0·6	0·2	SSW.		10·0
	4	0	29·766	49·1	48·2	0·9			2·2	1·2	SSW ½ W.	SW.	10·0

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
18.	Streaks of cirro-strati to N. and S.	B
20.	Linear and woolly cirri; smoke shews the wind to be from SSE.	B
22.	Woolly and linear cirri and cirrous haze.	W
0.	Id. id., cirro-strati; masses of scud on N. horizon.	W
2.	Id. id.	W
4.	Linear and flame cirri radiating from SW.	B
6.	Id.	B
8.		W
10.	Sky covered with thin scud.	W
18.	Clouds on horizon; cirrous haze.	H
20.	Woolly cirri, cirrous haze; cirro-strati to S. and E.	B
22.	Thick cirrous mass; shower of snow.	H
0.	Large woolly cirro-cumuli, scarcely moving.	W
2.	Cirrous scud and loose cumuli.	W
4.	Cirrous scud and woolly cirri.	W
6.	Cirrous clouds; foggy.	D
8.	Thick fog.	B
10.	Id.	W
18.	Scud.	W
20.	Thick scud; sky on NE. horizon.	W
22.	Scud, in different strata +— woolly cirri; rain, rainbow.	B
0.	Scud, woolly and feathered cirri; light rain.	B
2.	Thick scud: woolly cirri; drizzle.	B
4.	Two currents of scud; shower.	W
6.	Scud; light rain.	W
8.	Id.	W
10.	Cirrous scud.	B
18.	Scud.	W
20.	Id. +— woolly cirri; cirro-strati on E. horizon.	W
22.	Id. +— cirrous haze, linear cirri, and cirro-strati.	B
0.	Id. +— cirrous haze covering the sky; the sun shining faintly.	B
2.	Id. +— dense cirrous mass; occasional drops of rain.	B
4.	Id. +— id.	W
6.	Id. +— id.	W
8.	Id. id.; light rain.	B
10.	Cirrous haze to E.; scud to S.	B
18.	Clear.	W
20.	Loose scud on S. horizon +— cirrous haze on E. horizon.	W
22.	Id.	B
0.	Scud to SE.	B
2.	Id.	B
4.	Mottled, reticulated, and cymoid cirri, with cirrous haze, forming over a great part of the sky; masses of scud.	W
6.	Clear.	W
8.	Cirrous haze to SW.	B
10.	Clear.	B
18.	Scud.	W
20.	Homogeneous; cirro-strati on E. horizon.	W
22.	Thin smoky scud +— dense cirrous clouds.	B
0.	Id. +— id.; light rain.	B
2.	Id. +— id.	B
4.	Loose scud; light drizzle.	W

Göttingen Mean Time of Observation.				Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Nov.	30	6	0	29·720	49.0	48·3	0·7			2·2	0·6	SW.	SW.	10·0
		8	0	719	50·3	49·1	1·2			1·1	0·2			10·0
		10	0	738	48·3	47·6	0·7			0·0	0·0		N.	7·5
		18	0	29·888	33·6	33·0	0·6			0·8	0·0			0·0
		20	0	905	31·6	31·3	0·3	49·9 30·4		0·0	0·0			0·3
		22	0	932	34·7	33·9	0·8			0·0	0·0			10·0
Dec.	1	0	0	926	36·3	35·6	0·7		0·013	0·0	0·0			10·0
		2	0	916	38·5	37·1	1·4			0·0	0·0			9·8
		4	0	919	36·0	35·3	0·7			0·0	0·0		NW.	7·0
		6	0	940	30·0	29·9	0·1			0·0	0·0			0·2
		8	0	939	28·0	...	...			0·0	0·0		NNW.	0·3
		10	0	924	27·3	27·1	0·2			0·0	0·0			0·5
		18	0	29·838	32·9	32·2	0·7			0·0	0·0			7·0
		20	0	837	40·9	40·0	0·9			0·2	0·3	WSW.	WSW?	10·0
		22	0	853	42·7	41·8	0·9	38·8 25·3		1·0	1·5	SW ½ W.	WSW : W.	10·0
Dec.	2	0	0	853	45·0	44·2	0·8		0·010	2·0	0·3	SW ½ W.	SW by W : W.	10·0
		2	0	847	46·6	45·2	1·4			0·6	0·6	SW ½ S.	SW by W : WNW.	10·0
		4	0	878	47·6	46·3	1·3			0·6	0·4	WSW.	W : WNW : NW.	8·5
		6	0	912	45·1	44·5	0·6			0·4	0·2	SW ½ S.		1·0
		8	0	955	44·9	43·6	1·3			0·2	0·1	WSW ½ S.	WNW.	1·5
		10	0	995	42·2	41·3	0·9			0·2	0·0		WNW.	2·0
Dec.	3	0	0	...	...	...	...	48·1 38·2		1·9		SW.		
		18	0	29·998	49·9	48·0	1·9			2·5	0·6	SW ½ S?	W.	10·0
		20	0	30·020	48·8	47·7	1·1			0·6	0·1	SSW ½ W?	W.	10·0
		22	0	30·036	48·8	47·7	1·1	50·2 45·6		0·6	0·3	SW ½ S.	W by S : W.	7·5
Dec.	4	0	0	30·029	50·9	49·1	1·8		0·000	0·9	0·3	SW by S.	SW.	9·8
		2	0	29·970	50·7	48·9	1·8			0·8	0·4	SW ½ S.	SW by W : W by N.	9·0
		4	0	29·932	49·8	48·2	1·6			1·4	0·3	SW ½ S.	SW.	9·8
		6	0	29·903	48·9	46·6	2·3			3·0	0·8	SW. v.	SW by S.	10·0
		8	0	29·859	48·5	46·3	2·2			3·0	0·5	WSW. v.	SW.	9·5
		10	0	29·800	48·6	46·6	2·0			1·9	0·8	SSW ½ W.	SW.	9·8
		18	0	29·555	49·0	46·6	2·4			7·6	4·7	SW. v.	WSW.	9·5
		20	0	488	49·4	46·9	2·5	51·5 48·4		5·2	3·8	SW. v.	SW.	9·8
		22	0	485	49·3	48·3	1·0			6·8	2·6	SW.	SW.	10·0
Dec.	5	0	0	476	50·5	47·6	2·9		0·004	3·0	0·8	SW. v.	SW.	9·8
		2	0	465	49·1	45·9	3·2			3·1	2·1	SW.	WSW : WSW.	9·0
		4	0	462	46·2	43·8	2·4			2·6	1·8	SW.	WSW.	4·0
		6	0	503	44·7	41·0	3·7			4·4	1·9	SW.	WSW.	5·0
		8	0	556	41·8	38·0	3·8			3·9	3·6	SW ½ W.	W.	6·5
		10	0	597	40·4	37·3	3·1			1·9	1·4	SW.	W.	2·0
		18	0	29·683	42·0	39·0	3·0			4·1	1·3	SW. v.	W ½ N.	4·0
		20	0	723	44·5	40·8	3·7			4·1	2·1	W. v.	W ½ N.	9·0
		22	0	762	44·8	40·6	4·2	50·4 38·4		5·2	2·3	W.	WNW.	1·0
Dec.	6	0	0	814	43·3	40·7	2·6		0·029	5·5	1·3	W. v.	W by N.	0·5
		2	0	857	46·3	41·3	5·0			4·8	3·0	W by N.		0·3
		4	0	889	44·3	40·9	3·4			2·2	1·3	SW. v.	WNW.	0·5
		6	0	927	44·9	41·0	3·9			2·1	0·8	SW. v.	W by N.	5·0

SPECIES OF CLOUDS, &c.	Observer's Initial.
h.	
6. Loose scud; light drizzle.	W
8. Id.; id.	B
10. Large woolly cirro-cumuli ⟵ cirrous haze to SW.	B
18. Clear.	W
20. Cirro-strati and cirrous haze to E. and S.	W
22. Thick, ribbed, and evenly mottled cirrous clouds, nearly homogeneous.	B
0. As before, but much thicker.	B
2. Irregular, hazy, woolly, and linear cirrous mass, with a little hazy sky in zenith; breaking a little.	B
4. Cirro-cumuli of all varieties and forms, passing from the finest spots to the largest masses; some of them hanging like bags, lying in strata, and other forms; in some places of a bluish-grey, with patches of whitish-yellow ⟵ hazy linear cirri under the cirro-cumuli to NE., radiating from NNW.; thick and hazy to E.; feathered and woolly cirri above the cirro-cumuli.	W
6. Woolly cirri to S.	W
8. Long ribbons of thin woolly cirri, radiating from WSW., of different lengths, some of them stretching from the WSW. point of the horizon to 45° past the zenith, *i.e.* 135°; the whole move from about NNW.; stars of small magnitude are visible through the strips; in passing over the moon they cause a small corona.	B
10. Uncommonly thin haze over the sky; streaks of ribbon-cirri to E. A beautiful lunar halo 23° radius, the complete breadth of the ring is about 4°.	B
18.	W
20. Scud ⟵ cirrous clouds.	W
22. Scud: cirro-cumuli. Woolly and diffuse cirri cover the whole sky; strata of loose cirro-cumuli moving slowly: a great band of dense scud with attendant patches of loose thin scud, moving rapidly from WSW., the patches quickest; the whole issues from a misty mass to SW., the patches moving over all parts of the sky and far below the cirrous clouds.	B
0. Nearly as before, but the sky is more completely covered by thin smoky scud.	B
2. Two currents of scud ⟵ cirri.	B
4. Masses of loose smoky scud in two currents: large loose cirro-cumuli, moving slowly ⟵ cirrous clouds; bands of cirro-strati and scud near the horizon.	W
6. Cirri and patches of scud; lunar corona.	W
8. Scud ⟵ cirrous haze to E.	W
10. Id.	B
18. Scud ⟵ cirrous clouds.	B
20. Id.	B
22. Loose scud: linear and mottled cirri.	W
0. Scud ⟵ cirro-strati to E.	W
2. Loose scud: large cirro-cumuli.	W
4. Scud ⟵ linear cirri and cirro-cumuli.	B
6. Scud ⟵ cirrous clouds.	B
8. Id.	W
10. Id., moving rapidly.	W
18. Scud.	B
20. Thin detached masses of scud, very low ⟵ the upper scud is red below.	B
22. Scud ⟵ dense cirrous clouds; slight drizzle.	W
0. Patches of scud, cirro-cumulous scud ⟵ the upper mass of cirrous clouds breaking up into woolly and linear cirri and cirrous haze.	W
2. Masses of scud: woolly, mottled, and diffuse cirri and cirrous haze; part of a solar halo lately.	W
4. Scud on horizon; nimbi to S., with cirrous crowns; very black to SE; beautiful strata of cirro-cumuli and mottled cirri, chequered in different ways, the strata lying ENE. to WSW., but passing 20° to the S. of the zenith.	B
6. Scud.	B
8. Id.	W
10. Id.	W
18. Id.	B
20. Id.; light rain.	B
22. Masses of scud near horizon.	W
0. Masses of thin scud; passing showers.	W
2. Id.; cirrous haze to E. and N.	W
4. Masses of scud ⟵ linear cirri to SW., radiating from NNW.; cirrous haze on N. and E. horizon.	B
6. Scud ⟵ patches of cirri to SE.	B

Göttingen Mean Time of Observation.				Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
										Max.	Pres.			
	d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Dec.	6	8	0	29·902	46·6	42·8	3·8			4·4	3·9	W.	W by N : NW.	7·0
		10	0	940	43·5	40·9	2·6			4·2	0·0		W.	6·5
		18	0	29·790	45·3	43·3	2·0			2·9	1·4	SW ½ S.	SW : WNW.	9·0
		20	0	732	45·1	44·1	1·0	46·3 42·5		2·1	1·7	SW ½ S.	SW : WNW ?	9·8
		22	0	656	47·3	45·3	2·0			4·9	3·7	SW. v.	SW : WNW : WNW.	7·0
Dec.	7	0	0	637	48·9	47·0	1·9		0·182	3·4	1·3	SW ½ W.	W : WNW ?	9·8
		2	0	629	50·1	48·7	1·4			3·2	1·8	SW. v.	W.	10·0
		4	0	556	54·0	50·8	3·2			2·4	1·4	SW. v.	W by S : W.	10·0
		6	0	544	53·6	50·7	2·9			1·9	0·4	SW ?		10·0
		8	0	584	53·6	50·9	2·7			3·8	2·6	SW by W. v.	W by N.	10·0
		10	0	638	52·1	49·2	2·9			2·3	1·4	WSW.	W.	3·0
		18	0	29·837	44·6	41·7	2·9			1·8	0·6	W by S. v.	WNW.	1·5
		20	40	856	45·3	41·9	3·4	53·8 43·5		0·6	0·2	WSW ?	WNW.	8·5
		22	0	876	47·0	43·0	4·0			1·2	1·1	WSW ½ S.	WNW.	9·5
Dec.	8	0	0	888	48·3	44·7	3·6		0·253	2·3	1·0	SW.	W by N.	9·5
		2	0	865	48·2	44·3	3·9			3·2	1·8	WSW.	WNW.	4·0
		4	0	887	48·2	44·3	3·9			1·6	1·1	W by S.	WNW : WNW.	6·0
		6	0	914	47·6	44·6	3·0			1·6	0·3	WSW ?	WNW : WNW.	3·5
		8	0	919	47·0	44·7	2·3			1·4	0·5	W ½ N.	NW.	3·0
		10	0	947	46·7	45·0	1·7			0·6	0·2	W.	NW ?	2·0
		18	0	30·009	43·3	42·9	0·4			0·3	0·0		NW ?	1·3
		20	0	30·016	45·3	44·9	0·4	48·4 41·2		0·0	0·0		W.	9·8
		22	0	30·024	47·2	46·0	1·2			0·0	0·0		SW by W : W.	10·0
Dec.	9	0	0	30·024	48·7	47·6	1·1		0·012	0·2	0·1	WSW ½ S.	SW.	10·0
		2	0	30·002	49·1	47·8	1·3			0·1	0·1	SW ½ W.	SW : W.	10·0
		4	0	29·992	48·3	47·0	1·3			0·0	0·0		W.	9·8
		6	0	29·988	46·6	45·9	0·7			0·0	0·0		W.	10·0
		8	0	29·984	45·3	45·0	0·3			0·0	0·0		W.	9·8
		10	0	29·970	46·0	45·5	0·5			0·0	0·0			10·0
Dec.	10	0	0	...	...	...	...	49·2 38·7		0·0				
		18	20	29·894	44·3	42·4	1·9			0·7	0·1	SW ½ S.	SW : WSW.	4·0
		20	0	29·889	46·9	44·7	2·2	50·2 43·3		0·2	0·2	SSW ½ W.	SW.	9·8
		22	0	29·916	47·7	46·0	1·7			0·9	0·0		SW by S.	10·0
Dec.	11	0	0	29·920	49·7	47·4	2·3		0·000	1·1	0·8	SW. v.	SW.	9·8
		2	0	29·935	50·5	47·8	2·7			1·2	0·2	SW ½ S.	SW.	9·8
		4	0	29·966	48·7	46·9	1·8			0·4	0·2	SW.	SW.	10·0
		6	0	29·986	48·3	46·8	1·5			0·4	0·1	SW ½ W.	SW.	10·0
		8	0	30·023	47·5	46·3	1·2			0·1	0·0		SW.	9·9
		10	0	30·044	44·2	44·0	0·2			0·0	0·0		SW ?	5·0
		18	0	30·123	46·3	45·6	0·7			0·0	0·0			9·8
		20	0	128	43·1	43·0	0·1	51·1 40·5		0·0	0·0		SW.	2·0
		22	0	152	46·2	45·8	0·4			0·0	0·0		SW.	9·8
Dec.	12	0	0	151	49·0	47·6	1·4		0·000	0·0	0·2	SSW.	SW.	10·0
		2	0	135	49·1	47·2	1·9			0·1	0·2	SW ½ S.	SW.	9·8
		4	0	122	47·8	45·8	2·0			0·3	0·1	SW ½ S.	SW.	9·8
		6	0	118	47·0	45·0	2·0			0·5	0·3	SSW.	SW.	10·0
		8	0	129	46·8	43·7	3·1			1·1	0·2	SSW ½ W.		10·0
		10	0	100	47·2	44·8	2·4			0·6	0·2	SSW ½ W.		10·0
		18	0	30·021	47·4	45·6	1·8			2·7	1·5	SW ½ S.	SW ?	10·0

Dec. 6^{d} 8^{h}. The reading of the barometer is very doubtful, the observation was evidently hurried, and not entered into the note-book.

	SPECIES OF CLOUDS, &c.	Observer's Initial.
h.		
8.	Scud: sheets of cirri, crossed at right angles by linear cirri; coloured corona about the moon, first yellowish-white, passing into brown, blue, and green successively; the radius of the outer circle being about 4°. At 8h 15m a distinct halo of 20° radius.	W
10.	Scud ← diffuse cirri and cirro-strati; a few minutes ago there were a lunar halo and coloured corona.	W
18.	Masses of thin scud: sheets of cirri; a coloured lunar corona; occasional drops of rain.	B
20.	Patches of scud: a thick cirrous mass over most of the sky; light rain.	B
22.	Small patches of thin scud: cirro-cumulo-strati and cirro-cumuli: woolly and diffuse cirri, moving very slowly.	W
0.	Scud: thick cirrous clouds.	W
2.	Id.; light rain.	W
4.	Two currents of scud.	B
6.	Very thick scud.	B
8.	Scud; a few drops of rain.	W
10.	Id.	W
18.	Scud ← cirri.	B
20.	Id. ← linear cirri to E.	B
22.	Id. ← id. N.	W
0.	Id. ← linear and mottled cirri to SE.	W
2.	Id. ← patches of cirri.	W
4.	Id.: beautifully mottled and reticulated cirri in strata radiating from SSE. and WNW.	B
6.	Id.: streak of woolly cirrus.	B
8.	Id. ← linear cirri and cirrous haze.	W
10.	Patches of scud ← linear cirri, cirro-strati, and cirrous haze; the linear cirri in short lines pointing SSE. and these in strata lying WNW. to ESE.	B
18.	Scud ← cirrous haze all round the horizon. 18h 30m. Scud passing over the Moon produces a coloured corona; yellow, orange, blue, yellowish-green, and orange, are the colours from the Moon outwards; the extreme radius being 6°.	B
20.	Cirrous scud.	B
22.	Scud: cirrous clouds.	W
0.	Id. ← id.	W
2.	Masses of scud: cirrous scud and cirrous clouds.	W
4.	Cirrous scud and woolly cirri, moving very slowly.	B
6.	Id.	B
8.	Id.	W
10.	Overcast.	W
18.	Scud: patches of mottled cirri and cirro-cumuli, moving very slowly.	W
20.	Id.; clear on E. horizon.	W
22.	Id.	B
0.	Thin scud ← mottled, woolly, and diffuse cirri and cirro-strati; wind in gusts, when blowing strongest it is from S.	B
2.	Id. ← id.	B
4.	Thick scud.	W
6.	Id.	W
8.	Id.	B
10.	Thin scud ← cirro-strati to E.	B
18.	Cirro-cumulous scud; cirro-strati to SW.	W
20.	Loose scud, moving quickly; heavy dew since 18h.	W
22.	Loose scud; clouds blue, yellow, and gray.	B
0.	Scud.	W
2.	Id.; the lowest thinnest and moving quickest.	B
4.	Id. ← loose cumuli to S.	W
6.	Id.	W
8.	Id.; Auroral light? to NNW.	B
10.	Id.; very dark.	B
18.	Thick scud.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Dec. 12	20	0	30·022	46·9	44·0	2·9			3·6	1·5	SW.	SW.	10·0
	22	0	033	46·7	44·0	2·7	49·3		3·5	1·7	SW ½ S.	SW by W.	10·0
Dec. 13	0	0	051	46·7	44·4	2·3	45·5		1·6	0·2	SW ½ S.	SW by W.	10·0
	2	0	032	46·0	43·8	2·2		0·000	2·8	1·6	SW ½ S.	SW : SW ?	7·0
	4	0	038	46·0	43·9	2·1			2·1	0·6	SSW ½ W.	SW by W.	9·8
	6	0	051	45·7	44·3	1·4			1·8	0·2	SW by S.		10·0
	8	0	051	46·0	44·7	1·3			1·2	0·9	SW ½ S.		10·0
	10	0	070	47·2	46·3	0·9			2·1	0·3	SW ½ S.		10·0
	18	0	30·022	48·4	47·0	1·4			2·3	1·2	SW ½ S.	WSW.	7·0
	20	0	30·012	45·9	44·3	1·6			0·8	0·2	SW ½ W.	WSW.	4·0
	22	0	30·015	48·3	45·9	2·4	48·2		1·1	0·5	SW. v.	WSW ½ S.	10·0
Dec. 14	0	0	29·997	48·9	46·0	2·9	45·2		2·2	1·7	SW by S. v.	SW by W : WNW.	9·9
	2	0	29·948	49·0	46·1	2·9		0·013	4·7	2·1	SW. v.	SW by W : WNW.	9·8
	4	0	29·935	48·7	45·6	3·1			4·1	1·0	SW ½ S.	WSW ½ W.	8·0
	6	0	29·898	49·2	46·0	3·2			2·2	2·2	SW.		4·0
	8	0	29·845	48·9	46·6	2·3			5·7	4·8	SW.	W ½ S.	3·5
	10	0	29·838	51·0	47·2	3·8			6·1	4·8	SW.	W ½ S.	7·0
	18	0	29·744	52·7	49·0	3·7			7·5	4·0	WSW. v.	W ½ N.	9·8
	20	0	739	53·0	49·4	3·6			5·5	5·2	W. v.	W.	8·0
	22	0	793	49·7	49·0	0·7	49·0		3·4	1·8	W. v.	W : W.	9·5
Dec. 15	0	0	846	48·7	46·2	2·5	48·2 ?		2·8	0·8	W.	W ½ N.	9·8
	2	0	854	47·1	44·6	2·5		0·000	2·1	1·1	W by N ?	W by N.	8·5
	4	0	869	45·8	43·1	2·7			1·7	1·2	W.	W by N : W.	8·5
	6	0	889	44·9	43·1	1·8			1·4	0·4	W by N.		6·5
	8	0	922	44·3	40·9	3·4			1·6	0·3	W by N ?		2·5
	10	0	953	42·2	40·0	2·2			0·6	0·0		W.	0·5
	18	0	30·001	39·3	36·4	2·9			0·8	0·1	WSW ?	WNW.	3·5
	20	0	013	39·6	37·0	2·6			0·3	0·3	WSW.		1·0
	22	0	052	38·0	36·3	1·7	53·2		0·3	0·1		NW by W.	2·0
Dec. 16	0	0	067	42·0	38·5	3·5	32·8		0·7	0·4	WSW ½ S.	WNW ?	1·0
	2	0	088	42·6	39·0	3·6		0·000	0·8	0·2	W by S ?	NW ?	1·5
	4	0	101	39·5	37·5	2·0			0·3	0·1	WSW ?	NW.	1·5
	6	0	107	37·9	36·7	1·2			0·2	0·0			0·5
	8	0	103	40·3	38·7	1·6			0·1	0·0			10·0
	10	0	079	42·9	41·4	1·5			0·2	0·0			10·0
Dec. 17	0	0	...	...	...	...	42·8 36·6		3·1		W.		
	18	0	30·166	44·7	44·0	0·7			1·1	0·0			10·0
	20	0	171	45·3	44·6	0·7			0·1	0·0		W.	10·0
	22	0	194	44·9	44·3	0·6	51·1		0·0	0·0		WSW ? : W.	8·0
Dec. 18	0	0	196	47·3	45·8	1·5	37·2		0·1	0·1	SW ?	WSW ?	9·9
	2	0	194	47·3	45·4	1·9		0·000	0·1	0·0		WSW.	9·9
	4	0	191	45·3	43·6	1·7			0·3	0·1	SW ½ S.	WSW.	9·9
	6	0	192	42·9	41·7	1·2			0·1	0·0		WSW.	8·8
	8	0	200	43·6	42·5	1·1			0·0	0·0			10·0
	10	0	205	42·9	41·8	1·1			0·0	0·0			9·8
	18	0	30·161	42·8	41·5	1·3			0·3	0·0			10·0
	20	0	150	42·7	41·1	1·6			0·1	0·0			10·0
	22	0	146	42·7	41·2	1·5	47·2		0·0	0·0		SW.	10·0
Dec. 19	0	0	146	44·7	41·8	2·9	41·6		0·0	0·0		SW.	10·0
	2	0	119	44·3	41·7	2·6		0·008	0·2	0·1	SW by S.		10·0
	4	0	113	44·0	41·7	2·3			0·3	0·1	SSW ?	WSW ½ S.	10·0
	6	0	111	43·8	41·9	1·9			0·2	0·0			10·0

Dec. 14^d 22^h. The minimum temperature is taken from the readings of the dry bulb thermometer.

Quantity of Clouds.	Species of Clouds, &c.	Observer's Initial.
0—10.	h.	
10·0	20. Scud.	W
10·0	22. Id., in loose masses.	B
10·0	0. Id., id.	W
7·0	2. Id., id.: woolly and mottled cirri, moving very slowly.	W
9·8	4. Id. +— cirrous clouds.	W
10·0	6. Id.	W
10·0	8. Id.	W
10·0	10. Id.; very dark.	B
7·0	18. Scud +— thin cirrous clouds to S.	W
4·0	20. Patches of loose scud +— linear cirri and cirrous haze; very thin cirro-strati on horizon.	W
10·0	22. Thin low scud +— thick cirrous haze, mottled cirri, and cirro-strati, covering the sky; the mottled cirri, radiating in sheets from SSE ½ E.	B
9·9	0. Scud: cirrous clouds; nearly as before.	B
9·8	2. As at 0^h; clouds quite blue to SE., sky to WNW.	B
8·0	4. Scud +— mottled, waved, and reticulated cirri; cirrous haze.	W
4·0	6. Id. +— thin cirrous clouds and cirrous haze.	W
3·5	8. Id.; slight drops of rain.	B
7·0	10. Id.	B
9·8	18. Id.	W
8·0	20. Id.; a few drops of rain.	W
9·5	22. Thin scud: woolly woven cirri, radiating from E. and W.; light rain.	B
9·8	0. Id. +— cirri; light rain.	B
8·5	2. Id. +— id.; drops of rain.	B
8·5	4. Id.: mottled and interlaced cirri.	W
6·5	6. Scud.	W
2·5	8. Id., radiating from W. and E.	B
0·5	10. Patches of scud.	B
3·5	18. Scud +— bands of light cirri lying E. and W.	W
1·0	20. Cirro-strati and linear cirri; masses of scud to S.	W
2·0	22. Flambeaux of woolly cirri reaching from E. horizon to zenith, radiating from about ENE.; linear cirri to S. lying ESE. to WNW.	B
1·0	0. Strips of mottled cirri +— cirro-strati and cirrous haze on horizon.	B
1·5	2. Cirro-strati, sheets of reticulated, mottled, and curled cirri.	B
1·5	4. Thin woolly cirri and masses of cirro-cumuli +— cirro-strati and cirrous haze on horizon; masses of scud.	W
0·5	6. Cirro-strati.	W
10·0	8. Dark.	B
10·0	10. Id.	B
10·0	18. Id.	B
10·0	20. Scud.	B
8·0	22. Patches of loose scud: large, loose, woolly cirro-cumuli +— woolly cirri.	W
9·9	0. Thick cirro-cumulo-strati +— masses of loose scud to S.	W
9·9	2. Scud +— cirro-strati to E.	W
9·9	4. Id. +— id.	W
8·8	6. Id.	B
10·0	8. Id.	W
9·8	10. Id.	W
10·0	18. Dark.	B
10·0	20. Thick scud.	B
10·0	22. Id., moving slowly.	W
10·0	0. Id.	W
10·0	2. Id.	W
10·0	4. Scud.	B
10·0	6. Id.	B

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.				Rain Gauge.	Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			1–10.
Dec. 19	8	0	30·095	43·7	42·2	1·5			0·3	0·1	S by W.		10·0
	10	0	098	45·3	43·6	1·7			0·3	0·0			10·0
	18	0	30·074	46·7	45·4	1·3			0·6	0·0			10·0
	20	0	30·048	45·7	44·1	1·6	46·4 41·4		0·1	0·1	SSW ?	SW.	9·9
	22	0	30·036	45·7	43·9	1·8			0·3	0·1	SSW ½ W.	WSW.	9·8
Dec. 20	0	0	30·010	46·6	44·6	2·0		0·002	0·2	0·2	SSW ½ W.	SW : SW ?	10·0
	2	0	29·973	47·5	45·8	1·7			0·2	0·0		SW : WSW ?	9·8
	4	0	29·956	49·4	48·3	1·1			0·5	0·1		SW ½ W : WSW.	9·8
	6	0	29·941	49·2	47·0	2·2			1·1	0·2	SW.		10·0
	8	0	29·913	48·5	46·0	2·5			1·1	0·6	SW.		6·5
	10	0	29·891	47·7	45·6	2·1			0·5	0·2	SW.		10·0
	18	0	29·940	45·5	44·5	1·0			0·0	0·0			7·0
	20	0	29·994	39·0	39·0	0·0	49·0 38·4		0·0	0·0		W.	0·3
	22	0	30·055	38·9	38·7	0·2			0·1	0·0	SW.	WNW ?	0·3
Dec. 21	0	0	30·077	43·4	42·3	1·1		0·040	0·1	0·1	SSW.	WNW.	5·0
	2	0	30·086	45·0	43·6	1·4			0·2	0·0			0·5
	4	0	30·103	40·8	40·6	0·2			0·0	0·0			1·5
	6	0	30·109	37·1	37·0	0·1			0·0	0·0			2·0
	8	0	30·105	39·6	39·3	0·3			0·0	0·0			3·0
	10	0	30·067	38·6	38·0	0·6			0·0	0·0			0·5
	18	0	29·925	44·2	43·7	0·5			0·3	0·0		WSW ?	3·0
	20	0	871	45·3	44·1	1·2	46·1 36·2		...	...			7·0 ?
	22	0	826	48·3	46·2	2·1			...	...	SSW.		
Dec. 22	0	0	759	51·0	48·6	2·4		0·000	2·8	1·4	SSW.	SSW.	10·0
	2	0	691	53·0	51·0	2·0			4·5	3·4	SW by S.	SW by S.	10·0
	4	0	636	53·7	51·8	1·9			6·0	4·8	SSW ½ W.	SW ½ W.	7·0
	6	0	631	53·7	50·5	3·2			7·3	5·6	SSW ½ W.	SW ?	7·0
	8	0	660	52·2	48·2	4·0			5·8	3·9	SW by S.		7·5
	10	0	710	51·0	46·8	4·2			4·7	2·1	SW by S.		10·0
	18	0	29·887	50·0	46·8	3·2			5·2	2·1	SW by S.	WSW.	6·0
	20	0	937	48·5	45·2	3·3	53·9 46·3		1·9	1·1	SW by S.	W by S.	7·0
	22	0	964	46·8	45·6	1·2			2·5	1·3	SW ½ S.	SW by W : W : W by N.	6·0
Dec. 23	0	0	996	49·0	46·9	2·1		0·000	3·5	1·7	SW.	SW by W : W.	7·5
	2	0	984	50·7	48·6	2·1			1·7	0·4	SW.	SW : W.	9·0
	4	0	961	50·2	48·2	2·0			0·7	0·2	SW ?	SW by W.	8·5
	6	0	984	51·0	49·7	1·3			0·6	0·5	WSW.		8·0
	8	0	969	51·9	50·9	1·0			2·1	0·6	SW.		10·0
	10	0	965	52·0	51·2	0·8			3·5	1·4	SW ½ W.		10·0
Dec. 24	0	0	...	...	...	...	52·0 49·8		3·4	...	SW.		
	18	0	30·186	49·6	49·0	0·6			1·1	0·0			10·0
	20	0	184	50·6	49·7	0·9	54·6 44·9		0·0	0·0		SSW.	9·8
	22	0	179	51·3	50·3	1·0			0·3	0·2	SSW.	SW by S.	10·0
Dec. 25	0	0	166	51·1	50·2	0·9		0·010	0·5	0·5	SSW.	SSW ½ W.	10·0
	2	0	132	51·8	50·0	1·8			0·2	0·1	SSW.	SW ½ S.	10·0
	4	0	095	50·2	48·0	2·2			1·5	0·2	S by W.	SW : SSW ½ W.	9·5
	6	0	079	48·0	45·7	2·3			2·2	1·6	WSW ½ S.		2·0
	8	0	074	48·1	45·8	2·3			1·4	1·3	SW ½ W.	SW.	6·0
	10	0	085	48·7	46·3	2·4			1·4	0·1	SSW ?		8 0
	18	0	30·078	47·6	45·4	2·2			3·0	1·1	SW by S.		4·5
	20	0	095	46·9	45·1	1·8			1·6	0·3	SW ½ W.	SW by W.	7·0
	22	0	130	47·8	46·2	1·6	51·4 45·4		0·6	0·1		SW : W by S.	9·0

Dec. 20^d 22^h. The maximum and minimum are taken from the dry bulb thermometer.

Dec. 21^d 20^h and 22^h. The meteorological observations are interpolated for the purposes of summation from the observations at 19^h, 21^h, and 23^h (see *Extra Observations*), the observations at 20^h and 22^h being accidentally lost.

Quantity of Clouds.	Species of Clouds, &c.	Observer's Initial.
1–10.	h.	
10·0	8. Scud.	W
10·0	10. Id.	W
10·0	18. Thick clouds.	B
9·9	20. Scud +— cirro-strati to SE., with a patch of reddish sky.	B
9·8	22. Loose scud +— dense homogeneous cirrous mass; cirro-strati on E. horizon	W
10·0	0. Scud: cirrous mass.	W
9·8	2. Loose scud: cirro-cumuli and dense cirrous clouds.	W
9·8	4. Id.: id.	B
10·0	6. Scud.	W
6·5	8. Id.	W
10·0	10. Id.	W
7·0	18. Strata of clouds lying ENE. to WSW.	B
0·3	20. Scud to S. +— cirro-strati on E. horizon.	B
0·3	22. Patches of scud +— cirro-strati and cirrous haze to SE.	W
5·0	0. Woolly and linear cirri.	H
0·5	2. Patches of mottled and woolly cirri; cirrous haze and cirro-strati on horizon.	W
1·5	4. Cirro-cumuli and woolly cirri to NW.; cirrous haze on horizon.	W
2·0	6. Sheets of cirro-strati reaching from SSW. to E.	B
3·0	8. Clouds on E. and S. horizon.	H
0·5	10. Streaks of clouds.	W
3·0	18. Scud +— cirro-strati and cirrous haze to E.	B
7·0?	20. Scud and cirrous clouds.	B
	22.	
10·0	0. Scud.	W
10·0	2. Id.	W
7·0	4. Id.; clouds just clearing off.	B
7·0	6. Id.	B
7·5	8. Id.	W
10·0	10. Id.	W
6·0	18. Id.	B
7·0	20. Id.	B
6·0	22. Two currents of scud: woolly and linear cirri and loose cirro-cumuli.	W
7·5	0. Scud: cirro-cumuli.	W
9·0	2. Scud: two strata of cirro-cumuli +— cirro-strati to SE., having the appearance of an oblique section of thin layers of sandstone, slightly contorted.	W
8·5	4. Scud +— sheets of cirro-strati, cirro-cumuli, and cirri, in different strata. About 4^h 20^m the cirro-strati to E. were very red.	B
8·0	6. Principally cirro-strati.	W
10·0	8. Overcast.	W
10·0	10. Id.	W
10·0	18. Id.	W
9·8	20. Scud.	W
10·0	22. Id.	B
10·0	0. Id.; the slightest spit of rain.	B
10·0	2. Id.	B
9·5	4. Id., in two currents.	W
2·0	6. Id.	W
6·0	8. Id.	W
8 0	10. Id.	B
4·5	18. Id.	W
7·0	20. Id. +— woolly cirri, slightly tinged with red.	W
9·0	22. Id.: cirri.	B

19^h,

Göttingen Mean Time of Observation.			BARO-METER Corrected.	THERMOMETERS.				RAIN GAUGE.	ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Max. and Min.		Pressure.		Direction of Wind.		
									Max.	Pres.			
d.	h.	m.	in.	°	°	°	°	in.	lbs.	lbs.			0–10.
Dec. 26	0	0	30·137	49·6	47·3	2·3		0·000	0·3	0·3	SW ½ S.	SW : W by S.	9·5
	2	0	115	49·6	47·2	2·4			0·9	0·4	SW ½ W.	SW.	10·0
	4	0	101	48·3	46·1	2·2			0·4	0·2	SW.	SW by W.	9·0
	6	0	104	45·6	44·3	1·3			0·6	0·3	SW.		1·0
	8	0	101	42·1	42·0	0·1			0·2	0·0			8·5
	10	0	101	44·8	44·3	0·5			0·1	0·0			9·5
	18	0	30·072	45·0	43·9	1·1			0·3	0·3	SW by S.		9·0
	20	0	079	44·3	43·6	0·7			0·5	0·4	SW ½ S.		1·0
	22	0	106	46·3	45·3	1·0	50·7 39·2		0·8	0·1	SW by S.	W ½ N.	8·0
Dec. 27	0	0	127	48·0	46·1	1·9		0·000	0·5	0·1	SW ½ S.	W ½ N.	9·5
	2	0	112	48·8	46·3	2·5			0·2	0·1	SW ½ S.	W	9·8
	4	0	113	45·0	43·9	1·1			0·2	0·1	SW.	WSW ½ W.	6·0
	6	0	141	42·7	41·8	0·9			0·8	0·2	SW ½ S.		0·8
	8	0	159	40·7	40·1	0·6			0·3	0·1	SW ?	W	0·3
	10	0	185	41·0	40·2	0·8			0·2	0·0			0·5
	18	0	30·182	42·3	42·2	0·1			0·3	0·1	SSW ?		0·2
	20	0	185	42·5	42·0	0·5			0·2	0·0		WSW.	2·0
	22	0	205	44·7	44·6	0·1	48·8 38·5		0·0	0·0		SW ½ W.	8·0
Dec. 28	0	0	207	46·9	46·0	0·9		0·000	0·3	0·2	SW ½ S.	SW by W.	2·0
	2	0	181	48·2	45·9	2·3			1·8	1·8	SW.	SW by W.	7·0
	4	0	189	46·7	44·9	1·8			1·6	0·3	S by W.	WSW ½ S.	9·8
	6	0	160	46·0	44·3	1·7			0·8	0·6	SSW.	WSW ½ S.	10·0
	8	0	168	46·0	43·8	2·2			0·7	0·3	SW ½ S.		10·0
	10	0	159	46·0	43·0	3·0			0·4	0·3	SW ½ S.	WSW ½ W.	10·0
	18	0	30·103	45·7	42·9	2·8			1·3	0·2	SW ½ S.		10·0
	20	0	084	45·6	43·2	2·4			1·5	0·3	SW ½ S.	WSW.	10·0
	22	0	095	46·1	43·8	2·3	49·0 44·5		0·9	0·3	SW.	WSW ½ S.	10·0
Dec. 29	0	0	092	47·7	45·0	2·7		0·000	0·5	0·4	SW.	WSW.	7·0
	2	0	051	47·9	45·2	2·7			0·5	0·3	SW ½ S.	SW by W : W.	1·0
	4	0	039	47·0	44·9	2·1			1·0	0·3	SW by S.	W by S : W ½ N.	3·5
	6	0	029	46·9	44·9	2·0			1·7	0·2	SSW ½ W.		8·0
	8	0	011	46·1	45·0	1·1			0·3	0·1	SW by S.	WSW ½ W.	8·5
	10	0	003	47·7	45·7	2·0			1·1	0·1	SW by S.		10·0
	18	0	29·844	44·5	42·4	2·1			2·7	0·2	SW.		2·0
	20	0	839	45·9	43·5	2·4			1·7	0·7	SW by S.	WSW : W.	2·5
	22	0	818	46·0	43·6	2·4	47·5 43·5		3·4	2·1	SW ½ S.	WSW : W.	4·5
Dec. 30	0	0	812	47·9	43·1	4·8		0·000	2·1	0·8	SW ½ S.	SW by W : WSW : SW by W ?	2·8
	2	0	758	45·8	42·7	3·1			3·7	3·0	SW ½ S.	SW by W : WSW : SW by W ?	2·5
	4	0	732	44·0	41·7	2·3			2·3	0·2	SW by S.	WSW : WSW ?	1·8
	6	0	696	43·4	41·3	3·1			1·7	0·6	SSW ½ W.	WSW.	3·0
	8	0	644	44·9	42·7	2·2			2·5	1·1	SW by S.	WSW.	2·3
	10	0	618	45·2	42·9	2·3			2·1	1·1	SW by S.	WSW.	8·5
Dec. 31	0	0	...	...	...	...	46·6 41·6	0·148	4·2				
	23	0	...	...	...	...	47·7 26·7	0·238					

h.	SPECIES OF CLOUDS, &c.	Observer's Initial.
0.	Cirrous scud : woolly cirri ← cirro-strati.	B
2.	Scud.	W
4.	Id. [the Moon.	W
6.	Masses of scud to N.; lines of cirro-cumuli to S. lying WSW. to ENE.; thin cirri causing a corona about	W
8.	Scud.	B
10.	Id.	B
18.	Scud; a few minutes ago the quantity of clouds was 6.	W
20.	Masses of scud near horizon; cirrous haze to E.	W
22.	Scud.	B
0.	Id.	W
2.	Id.	B
4.	Id.	W
6.	Masses of scud.	W
8.	Patches of scud.	B
10.	Id.	B
18.	Streaks of clouds on N. and S. horizon.	W
20.	Masses of scud ← cirro-strati and cirrous haze on horizon.	W
22.	Cirro-cumulous scud or large cirro-cumuli with loose edges ← cirro-strati with haze to E.; uncommonly heavy dew, hanging in large drops on the palings, &c.	B
0.	Loose cirro-cumulous scud ← masses of loose cumuli to S. and E.; cirro-strati to E.	W
2.	Id. ← thin scud below.	B
4.	Very loose scud ← patches of cirro-strati to N.	W
6.	Scud.	W
8.	Id.	W
10.	Id.	W
18.	Id.	W
20.	Id.	W
22.	Id.	B
0.	Cirro-cumulous scud ← thin scud to SE.	B
2.	Thin scud : watery woolly cirri.	B
4.	Loose scud : cirrous scud ← patches of cirro-strati to E.	W
6.	Scud.	W
8.	Id.	B
10.	Id.	B
18.	Masses of loose scud.	W
20.	Dark scud to S.: masses of loose woolly cirrous scud.	W
22.	Id. : id. ← between the scud and cirri are cirro-strati in strata one above another, and with cirrous and cirro-cumulous edges.	B
0.	Scud : loose and other cirro-strati : mottled and linear cirri.	H
2.	Id.: id.; id.	B
4.	Id.: id.	H
6.	Id. ← linear cirri and cirro-strati; the Moon seen distinctly through the scud. [strati to N.	W
8.	Masses of loose scud ← bands of linear cirri and cirrous haze reaching across the sky, lying SW. to NE.; cirro-	B
10.	Cirro-cumulous scud ← sheets of cirri.	B

TERM-DAY

AND

EXTRA METEOROLOGICAL OBSERVATIONS.

MAKERSTOUN OBSERVATORY,

1843.

Göttingen Mean Time of Observation.				Barometer Corrected.	Thermometers.			Anemometer.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Pressure.		Direction of Wind.		
								Max.	Pres.			
	d.	h.	m.	in.	°	°	°	lbs.	lbs.			0–10.
Jan.	9	20	47	28·221								
Jan.	12	20	0	28·029	33·9	33·8	0·1	...	0·3	SE.		10·0
		20	52	27·978								
		21	0	971								
		22	0	909	34·3	33·3	1·0	3·5	3·0	SE by S.		10·0
		23	0	885								
		23	35	870								
Jan.	13	0	0	864	35·6	34·7	0·9	3·2	0·5	SE.	SSE ?	9·7
		0	35	849								
		2	5	837	37·6	35·3	2·3	0·0	0·0			10·0
		4	0	850	35·6	34·7	0·9	0·0	0·0			10·0
Jan.	18	10	0	30·126	46·2	45·4	0·8	0·5	0·0			10·0
		11	0	127	46·2	45·0	1·2	0·3	0·3	WSW.		10·0
		12	0	130	46·3	45·4	0·9	0·5	0·5	W.		9·5
		13	0	133	46·2	45·5	0·7	0·5	0·5	W.		9·7
		14	0	139	46·1	45·3	0·8	0·5	0·7	W.		10·0
		15	0	150	46·8	45·7	1·1	0·8	0·5	SW by W.	WSW.	10·0
		16	0	153	46·9	45·4	1·5	1·0	0·0		W.	10·0
		17	0	132	46·0	45·2	0·8	1·2	2·0	SW by W.	W.	5·0
		18	0	139	46·2	45·2	1·0	1·8	1·0	WSW.	WSW.	6·0
		19	0	147	46·0	44·8	1·2	1·5	0·5	SW by W.	WSW.	9·0
		20	0	174	45·6	44·2	1·4	1·8	0·5	WSW.		10·0
		21	0	179	45·5	44·0	1·5	0·3	0·0			10·0
		22	0	190	45·8	44·8	1·0	0·5	0·5	SW by W.		10·0
		23	0	203	46·1	45·2	0·9	0·5	0·0			10·0
Jan.	19	0	0	196	46·8	45·7	1·1	0·5	0·8	SW by W.	WSW ?	10·0
		1	0	182	47·0	45·9	1·1	1·0	0·5	SW by W.		10·0
		2	0	176	47·0	45·5	1·5	0·0	0·0			10·0
		3	0	172	46·3	45·2	1·1	1·0	0·0			10·0
		4	0	172	46·5	45·2	1·3	0·0	0·0			10·0
		5	0	180	46·2	45·2	1·0	0·5	0·0			10·0
		6	0	182	45·3	44·4	0·9	0·3	0·3	SW.		10·0
		7	0	182	45·0	44·0	1·0	0·5	0·3	SW by W.		10·0
		8	0	184	44·7	43·7	1·0	0·3	0·0			10·0
		9	0	172	44·0	43·0	1·0	0·5	0·5	SW by W.		9·0
		10	0	176	43·5	42·5	1·0	1·0	1·0	SW by S.		9·0
Feb.	24	10	0	29·586	35·6	34·7	0·9	0·0	0·0			10·0
		11	0	583	35·2	34·6	0·6	0·0	0·0			10·0
		12	0	579	35·3	34·6	0·7	0·0	0·0			10·0
		13	0	580	34·8	34·3	0·5	0·0	0·0			9·0
		14	0	586	34·8	34·2	0 6	0·0	0·0			9·0
		15	0	582	34·9	34·4	0·5	0·0	0·0			9·0
		16	0	575	34·7	34·3	0·4	0·0	0·0			10·0
		17	0	584	34·5	33·9	0.6	0·0	0·0			10·0
		18	0	582	34·7	33·8	0·9	0·0	0·0			10·0
		19	0	590	34·5	33·5	1·0	0·0	0·0			8·0
		20	0	596	33·0	32·4	0·6	0·0	0·0		SSE : N.	9·0
		21	0	586	34·6	33·9	0·7	0·0	0·0		E by N.	10·0
		22	0	590	35·5	34·0	1·5	0·0	0·0			10·0
		23	0	586	36·5	34·2	2·3	0·0	0·0			10·0
Feb.	25	0	0	579	36·6	34·3	2·3	0·0	0·0		E.	10·0
		1	0	568	37·5	34·8	2·7	0·0	0·0			10·0
		2	0	559	37·6	35·4	2·2	0·0	0·0			10·0

h. m.	Species of Clouds, &c.	Observer's Initial.
20 47.		
20 0.	Snowing.	B
20 52.		
21 0.		
22 0.	Sleet.	W
23 0.		
23 35.		
0 0.	Scud + thick cirrous clouds; very hazy to E.; sky in patches to SW.	W
0 35.		
2 5.	Homogeneous, except a few cumuli to S.	W
4 0.		W
10 0.	Light rain.	D
11 0.	Very light rain.	D
12 0.	Scud and cirri.	D
13 0.	Scud; cirrous clouds.	D
14 0.	Id.; id.	W
15 0.	Scud, moving rapidly.	W
16 0.	Id. + cumulo-strati on horizon.	W
17 0.	Id. + woolly cirri.	W
18 0.	Id., moving rapidly.	D
19 0.	Id.	D
20 0.	Homogeneous scud; light rain.	D
21 0.	Scud.	D
22 0.	Id.; cumulo-strati on NE. horizon.	W
23 0.	Homogeneous scud; clearer to NE?	B
0 0.	Scud, nearly homogeneous.	B
1 0.	Homogeneous scud.	B
2 0.	Id. 2h 30m. The wind blew a gust of 1 lb. from WSW.	H
3 0.	Id.	H
4 0.	Id.	B
5 0.	Id.	B
6 0.	Light rain.	H
7 0.	Dark.	B
8 0.	Id.	W
9 0.	Apparently haze over a portion of the sky, as the stars are but dimly seen.	B
10 0.	As at last hour.	B
10 0.	Scud. A lightish appearance to N.; Aurora?	W
11 0.	Id.	W
12 0.	Id.	W
13 0.	Id.; a lightish appearance to NE.; Aurora?	W
14 0.	Patches of scud; dark clouds to NW.	H
15 0.	Id.; id.	H
16 0.	Lightish streak on SE. horizon.	H
17 0.		H
18 0.	Scud; a light streak on NE. horizon.	W
19 0.	Cirrous clouds to E.; clear on E. horizon.	H
20 0.	Cirrous scud: woolly cirri + patches of cirro-cumuli; heavy clouds to E.	H
21 0.	Id.	W
22 0.	Id.	H
23 0.	Clearing to S.	H
0 0.	Cirrous scud + patches of loose scud below.	W
1 0.	Id.	H
2 0.	Scud, thick to NE.	H

Göttingen Mean Time of Observation.				BAROMETER Corrected.	THERMOMETERS.			ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Pressure.		Direction of Wind.		
								Max.	Pres.			
	d.	h.	m.	in.	°	°	°	lbs.	lbs.			0–10.
Feb.	25	3	0	29·554	37·3	34·6	2·7	0·3	...		ENE ?	10·0
		4	0	547	35·3	34·5	0·8	0·3	0·0		E.	10·0
		5	0	548	36·0	34·8	1·2	0·0	0·0		E.	10·0
		6	0	547	35·3	34·1	1·2	0·0	0·0		E.	10·0
		7	0	563	34·8	33·8	1·0	0·0	0·0			10·0
		8	0	571	34·4	33·4	1·0	0·0	0·0			10·0
		9	0	566	34·6	33·6	1·0	0·0	0·0			10·0
		10	0	551	33·3	32·8	0·5	0·0	0·0			10·0
Mar.	6	14	0	29·975	38·0	37·6	0·4	...	...			2·0
		16	0	974	37·2	36·9	0·3	...	...			
Mar.	12	13	0	29·250	41·2	38·2	3·0	2·5	1·5	W.	W by N.	2·0
		14	0	252	41·1	38·1	3·0	2·5	1·5	W.	W by N.	2·0
Mar.	20	18	0	29·212	41·8	41·4	0·4	0·5	0·0		SSE ?	10·0
		19	0	206	42·9	42·0	0·9	0·3	0·0	E.	SSE.	10·0
		20	0	200	43·8	43·0	0·8	0·0	0·0		SSE.	10·0
		21	0	192	45·2	44·6	0·6	0·3	0·0	ESE.	SSE.	10·0
		22	0	197	49·8	49·1	0·7	0·5	0·3	SE by S.	SSE.	9·8
		23	0	187	50·6	48·1	2·5	1·8	1·0	S.	SSE : SSE ?	3·0
Mar.	21	0	0	189	52·4	49·7	2·7	1·5	1·0	S by E.	S.	9·5
		1	0	187	53·8	50·3	3·5	1·2	0·5	SSE.	SSE : S.	8·5
		2	0	184	54·1	49·2	4·9	1·8	0·8	SSE.	S.	7·0
		3	0	182	55·6	50·2	5·4	1·5	0·8	S by E.	S.	9·9
		4	0	182	54·2	50·0	4·2	0·5	0·3	SE by S.	S.	8·5
		5	0	179	54·9	50·7	4·2	0·8	0·5	SE.		9·0
		6	0	218	49·3	46·3	3·0	1·0	0·3	SW by S ?	Varying.	9·0
		7	0	216	48·0	46·0	2·0	0·0	0·0		SE by S.	10·0
		8	0	228	45·5	44·5	1·0	0·5	0·0		SSW.	10·0
		9	0	212	44·2	43·3	0·9	0·4	0·0			1·0
		10	0	200	43·0	42·7	0·3	0·3	0·0			0·0
		11	0	198	44·8	44·2	0·6	0·0	0·0			0·1
		12	0	187	45·3	44·1	1·2	0·3	0·0			0·3
		13	0	187	46·0	45·0	1·0	0·3	0·3	SE.		8·0
		14	0	181	47·7	45·9	1·8	0·5	0·3	E by N.		6·0
		15	0	156	46·0	44·6	1·4	0·3	0·0			7·0
		16	0	148	44·7	43·6	1·1	0·3	0·0			10·0
		17	0	132	45·3	44·1	1·2	0·3	0·0			10·0
		18	0	127	47·7	45·7	2·0	0·0	0·0		S by W ?	10·0
		19	0	113	47·3	45·5	1·8	0·3	0·0		SSE.	10·0
		20	0	122	47·5	46·0	1·5	0·3	0·3	S by E.	SSE.	10·0
		22	0	136	48·0	47·0	1·0	0·8	0·3	S by E.		10·0
		23	0	117	49·0	47·8	1·2	0·5	0·0		S.	9·9
Mar.	22	0	0	117	53·7	50·6	3·1	1·3	1·3	S by E.	SSE.	4·0
		2	0	127	58·0	52·4	5·6	2·5	1·5	S by W.	S by W.	7·0
		3	0	134	58·8	51·0	7·8	2·0	2·7	S by W.		7·0
		4	0	134	59·2	51·8	7·4	1·3	0·8	S by W.	SSW.	7·0
		5	0	166	56·7	50·2	6·5	1·2	0·5	S by W.	S by W.	7·0
		6	0	175	54·0	48·8	5·2	0·3	0·3	S by W.	SSW.	7·5
		7	0	207	50·0	47·0	3·0	0·3	0·0		S.	5·0
		8	0	219	47·7	45·6	2·1	0·0	0·0		S.	5·0
		9	0	227	49·6	47·0	2·6	0·0	0·0			3·0
		10	0	239	46·2	44·7	1·5	0·0	0·0			8·0

h.	m.	SPECIES OF CLOUDS, &c.	Observer's Initial.
3	0.	Scud; rain to ENE?	B
4	0.	Cirrous scud; hail a short time ago.	W
5	0.	Scud ⇷ cirrous scud.	W
6	0.	Loose scud ⇷ cirrous clouds.	W
7	0.	Id. ⇷ id.	B
8	0.	Very dark.	D
9	0.	Id.	D
10	0.	Id.	D
14	0.	Cumulous scud to NW. Light seen through the clouds to NNW., and when the clouds clear away a bank of light is seen along that portion [of the horizon.	B
16	0.		B
13	0.	Scud. Faint auroral light, stronger four hours ago.	B
14	0.	Id.	B
18	0.	Scud; light rain.	B
19	0.	Loose thin scud.	B
20	0.	Scud.	B
21	0.	Id. ⇷ loose-edged cumulo-strati and loose cumuli to E. and SE.	
22	0.	Id. ⇷ woolly cirro-cumuli and fine linear cirri lying N. and S.; cumulo-strati and loose cumuli near [the horizon.	W
23	0.	Large detached masses of scud: cirro-cumuli.	W
0	0.	Scud and loose cumuli ⇷ woolly cirri and cirro-cumuli.	W
1	0.	Thin scud: cirrous clouds.	W
2	0.	Detached masses of cumuli ⇷ cirro-cumuli.	W
3	0.	Loose cumuli ⇷ woolly cirri.	W
4	0.	Scud and masses of woolly cirro-cumuli.	B
5	0.	Scud; very dark to SSW.; thunder?	B
6	0.	A large mass of electric clouds moved up from SSW.; at first the W. was covered, but the tendency of the whole is towards the E.; the clouds at first appeared to be acted on by several currents, now they appear to move from SSE.; large drops of rain; sky to E. with beautiful cumulo-strati to SSE.	B
7	0.	Thick scud, falling in showers, the drops very large; hazy to E.; very black to S. and W.	B
8	0.	Heavy showers, scud.	B
9	0.	Clear, except a few clouds to N.	W
10	0.	Clear.	W
11	0.	Id., except a small patch of scud to E.	W
12	0.	Patches of loose scud.	W
13	0.	Thin scud.	W
14	0.	Id.	W
15	0.	Id.	W
16	0.	Id.	W
17	0.	Id.	W
18	0.	Scud in different strata, moving very slowly ⇷ cumulo-strati and cirro-strati to E.; the latter very red.	B
19	0.	Thick scud, a few drops of rain; cirrous clouds or haze above?	B
20	0.	Scud; light rain.	B
22	0.	Raining.	W
23	0.	Thick scud; clearing up from SSW.; rain.	W
0	0.	Patches of cirrous scud ⇷ a mass of clouds covers the sky from NW., by E., to SE. to an altitude of 40°, curled cirri at the edges, apparently becoming haze to NE.; cumulo-strati near horizon; cumuli to SW.	W
2	0.	Detached masses of loose cumuli ⇷ the sky almost completely covered with thin crossed woolly cirri; [cirrous haze on E. horizon.	W
3	0.	As at 2^h.	W
4	0.	Masses of loose cumuli and cumulo-strati ⇷ woolly cirrous clouds.	B
5	0.	Masses of cirrous-edged cumuli ⇷ ranges of cumuli on E. and S. horizon; thin mixed woolly cirri.	B
6	0.	Large masses of cumulo-strati ⇷ cirrous clouds.	B
7	0.	Masses of scud; the sky quite milky with cirrous haze.	W
8	0.	Thick masses of scud.	W
9	0.	Scud.	W
10	0.	Id.	H

Göttingen Mean Time of Observation.				Barometer Corrected.	Thermometers.			Anemometer.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Pressure.		Direction of Wind.		
								Max.	Pres.			
	d.	h.	m.	in.	°	°	°	lbs.	lbs.			0–10.
Mar.	22	11	0	29·234	47·0	44·8	2·2	0·0	0·0			10·0
		12	0	227	47·9	45·4	2·5	0·0	0·0			10·0
		13	0	222	47·6	46·2	1·4	0·0	0·0			10·0
		14	0	216	48·3	46·6	1·7	0·0	0·0			9·0
		15	0	192	48·2	46·5	1·7	0·5	0·3	SE.	S by E.	7·0
		16	0	177	47·9	46·4	1·5	0·3	0·0	NNE.		10·0
		17	0	161	47·1	45·8	1·3	0·3	1·3	SE.	SSE?	10·0
		18	0	143	48·8	46·8	2·0	2·0	0·3		ESE.	10·0
		19	0	140	50·0	47·0	3·0	1·5	0·8	E by S.	SSE.	10·0
		20	0	170	48·9	47·0	1·9	0·3	0·7		SE.	9·5
		21	0	160	47·5	45·9	1·6	0·0	0·0			10·0
		22	0	158	45·8	42·2	3·6	0·3	0·0	NNE.	SSE ?	10·0
		23	0	183	47·2	47·0	0·2	0·0	0·0			10·0
Mar.	23	0	0	183	48·2	48·0	0·2	0·0	0·0		SSE.	10·0
		1	0	195	51·7	50·2	1·5	0·0	0·0		S by E.	9·7
		2	0	204	55·4	52·0	3·4	0·5	0·7		S.	7·0
		3	0	221	54·8	51·3	3·5	1·0	0·5	SE by S.	S by E.	9·9
		4	0	236	53·7	51·0	2·7	1·3	0·7	SSE.	S by E.	10·0
		5	0	269	52·7	49·3	3·4	1·3	0·3	SW.	SW.	10·0
		6	0	311	51·2	48·7	2·5	0·5	0·0			6·0
		7	0	361	48·2	46·1	2·1	0·3	0·3	SW.	SW.	6·5
		8	0	374	44·7	43·2	1·5	0·3	0·0			0·5
		9	0	406	41·0	40·8	0·2	0·0	0·0			0·2
		10	0	421	41·2	40·8	0·4	0·0	0·0			5·0
Mar.	29	12	0	29·761	32·0	31·8	0·2	0·0	0·0			0·0
Apr.	5	12	0	29·590	37·9	36·7	1·2	0·0	0·0			
		14	0	576	36·0	34·8	1·2	0·0	0·0			0·0
		16	0	531	35·7	35·0	0·7	0·0	0·0			10·0
Apr.	6	12	0	29·177	44·6	43·2	1·4	0·0	0·0			6·0
		14	0	175	41·8	40·6	1·2	0·0	0·0			0·0
		16	0	167	39·8	39·0	0·8	0·5	0·0			0·3
Apr.	19	10	0	29·623	49·0	46·7	2·3	0·0	0·0			3·0
		11	0	629	47·8	46·1	1·7	0·0	0·0			3·0
		12	0	627	45·2	44·3	0·9	0·0	0·0			4·5
		13	0	609	44·6	43·9	0·7	0·0	0·0			3·0
		14	0	595	43·5	43·3	0·2	0·0	0·0			4·0
		15	0	582	42·2	41·9	0·3	0·0	0·0			1·0
		16	0	576	38·8	38·2	0·6	0·0	0·0			1·5
		17	0	567	39·0	39·0	0·0	0·0	0·0			1·5
		18	0	557	36·3	36·0	0·3	0·0	0·0		SW.	6·0
		19	0	549	40·6	40·3	0·3	0·0	0·0			4·0
		20	0	547	44·0	42·2	1·8	0·0	0·0		S ?	9·5
		21	0	547	50·2	45·3	4·9	0·0	0·0			9·0
		22	0	530	53·3	47·0	6·3	0·5	0·5	ENE.		9·0
		23	0	516	53·8	47·0	6·8	0·7	0·5	E by N.	SSE.	9·0
Apr.	20	0	0	509	55·8	49·0	6·8	0·7	0·3		SE by S.	9·9
		1	0	504	55·6	...	...	0·5	0·3		SE.	9·5
		2	0	484	55·0	50·0	5·0	0·3	0·3	E by S.	SE by S.	10·0
		3	0	463	54·2	49·0	5·2	0·5	0·1	NE.	S.	9·5
		4	0	467	52·8	48·1	4·7	0·5	0·1	NE.	SW.	10·0
		5	0	466	51·8	48·0	3·8	0·5	0·1	NE.		10·0
		6	0	468	51·3	47·5	3·8	0·3	0·0		SSW.	9·7

h.	m.	Species of Clouds, &c.	Observer's Initial.
11	0.	Scud.	W
12	0.	Id.	H
13	0.	Id.	H
14	0.	Id.	W
15	0.	Id.	B
16	0.	A few drops of rain. The wind since last hour has moved round by E. to N.	B
17	0.	Scud; a few drops of rain; wind beginning to blow.	B
18	0.	Id.	H
19	0.	Id., some of it very low + cirrous clouds.	B
20	0.	Id.	H
21	0.	Id.; drops of rain.	H
22	0.	Id.; smart shower.	B
23	0.	Rain.	W
0	0.	Scud + cumulo-strati to S.; breaking to S.	W
1	0.	Id. + large cirro-cumuli and cirrous haze; cumulo-strati and cumuli on horizon; clearing to S.	W
2	0.	Scud.	D
3	0.	Cirrous scud.	W
4	0.	Scud; light rain.	W
5	0.	Id.	H
6	0.	Heavy clouds on E. horizon.	H
7	0.	Scud.	D
8	0.	Small patches of scud; cirrous haze on horizon.	W
9	0.	Id.	W
10	0.	Scud.	W
12	0.	Aurora before this time. (See *Extra Magnetical Observations.*)	
12	0.	Aurora. (See *Extra Magnetical Observations.*)	W
14	0.	Id.; patches of clouds to NNW.	B
16	0.	The sky became quickly covered with scud at 15h 30m.	B
12	0.	Scud.	W
14	0.	Aurora.	W
16	0.	Id.	
10	0.	Scud.	W
11	0.	Id.	B
12	0.	Id.	D
13	0.	Clouds and haze on horizon.	H
14	0.	Id.; dark.	H
15	0.	Linear cirri to SSE.	B
16	0.	Scud?	D
17	0.	A sheet of loose cirro-cumuli; thick fog.	D
18	0.	Loose cirro-cumuli and woolly cirri; thick fog.	B
19	0.	Loose scud; foggy.	D
20	0.	Cirrous clouds, woolly cirri, &c.	B
21	0.	Id., id.	H
22	0.	The sky covered with cirrous clouds and haze; cumulo-strati.	W
23	0.	Nearly as before; large cirro-cumuli + cumulo-strati near horizon.	W
0	0.	Scud + cirrous clouds; cumulo-strati to S.; drops of rain.	W
1	0.	Id. + cirro-cumuli; the horizon dark with clouds to W.	H
2	0.	Id. + a thick mass of cirrous clouds; ranges of cumulo-strati to SE. and S.	W
3	0.	Id. + cirrous clouds to NE.	H
4	0.	Id. + cirro-strati to E.; cirri to NE.	H
5	0.	Id.; dark clouds to W.	H
6	0.	Id. + large cirro-cumuli.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.			ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Pressure. Max.	Pressure. Pres.	Direction of Wind.		
d.	h.	m.	in.	°	°	°	lbs.	lbs.			0–10.
Apr. 20	7	0	29·479	50·9	47·9	3·0	0·0	0·0		SSW.	10·0
	8	0	482	49·4	46·9	2·5	0·0	0·0		SSW ?	10·0
	9	0	507	48·7	47·3	1·4	0·0	0·0			10·0
	10	0	500	50·0	47·7	2·3	0·0	0·0			8·5
May 7	14	0	29·470	41·8	41·0	0·8	...	...			
May 26	10	0	29·181	49·8	47·3	2·5	0·7	0·3	SW.	WSW.	10·0
	11	0	181	49·1	47·0	2·1	0·5	0·2			9·9
	12	0	179	48·2	46·9	1·3	0·2	0·0			10·0
	13	0	172	48·4	47·1	1·3	0·0	0·0			10·0
	14	0	161	48·4	46·4	2·0	0·2	0·0			10·0
	15	0	148	48·2	46·2	2·0	0·2	0·0		W.	10·0
	16	0	139	48·2	46·3	1·9	0·2	0·1	SW by W.	W.	10·0
	17	0	144	48·0	46·2	1·8	0·4	0·0			10·0
	18	0	150	47·3	46·5	0·8	0·2	0·0		W.	10·0
	19	0	151	48·7	47·0	1·7	0·4	0·0		W.	10·0
	20	0	151	50·0	47·6	2·4	0·4	0·3	WSW.	W.	10·0
	21	0	150	51·0	48·2	2·8	0·2	0·0		W by S.	10·0
	22	0	148	50·8	47·7	3·1	0·2	0·0		W.	10·0
	23	0	147	53·0	49·1	3·9	0·4	0·3	WSW.	SW.	10·0
May 27	0	0	144	54·7	49·7	5·0	0·4	0·1	WSW.	WSW.	10·0
	1	0	140	53·0	48·8	4·2	0·7	0·0		WSW.	10·0
	2	0	134	53·0	49·3	3·7	0·5	0·2	SW.	WSW.	10·0
	3	0	125	54·3	52·7	1·6	0·6	0·2	SW by W.	W by S.	10·0
	4	0	121	54·2	53·1	1·1	0·6	0·0			10·0
	5	0	112	53·3	50·4	2·9	0·5	0·5	SW by W.		10·0
	6	0	108	54·2	50·1	4·1	0·5	0·2	SW by W.	W by S.	10·0
	7	0	110	52·7	49·2	3·5	0·3	0·0			10·0
	8	0	117	51·0	49·3	1·7	0·1	0·0		W by S.	10·0
	9	0	132	50·3	49·2	1·1	0·1	0·0			10·0
	10	0	141	49·0	47·9	1·1	0·0	0·0			10·0
June 7	12	0	29·136	56·2	56·0	0·2	2·5	0·7	SSE.		10·0
June 20	18	0	29·745	54·2	51·0	3·2	0·8	0·6	SW by S.	NW.	8·0
	19	0	733	54·8	51·8	3·0	1·3	0·6	SW.	NW.	9·0
	20	0	737	56·2	53·6	2·6	1·5	0·3	WSW.	WSW : W.	10·0
	21	0	730	57·4	54·9	2·5	0·8	0·3	SW.	W.	10·0
	22	0	727	59·1	54·2	4·9	0·7	1·4	SW by W.	W.	10·0
	23	0	727	60·6	55·8	4·8	1·2	1·0	WSW.	W by S.	9·8
June 21	0	0	732	60·2	54·4	5·8	1·0	0·2	WSW.	W.	9·0
	1	0	707	62·2	56·0	6·2	2·0	0·9	W by S. v.	WNW.	3·5
	2	0	717	63·1	56·7	6·4	1·0	1·0	W by S.	W.	6·0
	3	0	723	65·0	57·1	7·9	1·8	0·8	W. v.	W by N.	8·0
	4	0	713	64·7	56·7	8·0	1·1	0·8	WSW.	W by N.	8·5
	5	0	701	65·6	57·4	8·2	0·8	1·0	W by S.	W by N.	8·0
	6	0	696	63·3	56·3	7·0	1·1	1·0	WNW v.		6·0
	7	0	704	63·0	55·2	7·8	1·5	0·5	W by N.		3·0
	8	0	703	61·7	54·8	6·9	0·9	0·7	W v.		0·5
	9	0	714	57·9	52·9	5·0	0·5	0·1	W.		0·2
	10	0	741	53·4	50·2	3·2	0·2	0·0			0·4
	11	0	757	51·5	48·8	2·7	0·0	0·0			3·0
	12	0	761	49·1	47·0	2·1	0·0	0·0			5·0
	13	0	771	49·6	47·4	2·2	0·0	0·0			6·5
	14	0	777	48·1	46·2	1·9	0·0	0·0		W by N.	6·0

h. m.	SPECIES OF CLOUDS, &c.	Observer's Initial.
7 0.	Scud.	W
8 0.	Id.	W
9 0.	Id.	D
10 0.	Id.	W
14 0.		B
10 0.	Cirro-cumulous scud.	H
11 0.	Id.	D
12 0.	Scud.	D
13 0.	Id.	D
14 0.	Id.; luminous opening to NE. by N. portion of horizon.	B
15 0.	Id.	W
16 0.	Id.	W
17 0.	Id.	W
18 0.	Id.; cirro-strati all round; slight drizzle.	D
19 0.	Id.; id.; id.	W
20 0.	Id.; cirro-strati on S. and E. horizon.	W
21 0.	Id.; id. to NE.	W
22 0.	Id.; id.	W
23 0.	Id.	H
0 0.	Id.	B
1 0.	Id.	B
2 0.	Id.	H
3 0.	Id.; a few drops of rain.	B
4 0.	Id.; id.	B
5 0.	Id.; rain.	B
6 0.	Id. +— cirrous clouds and haze to E.	D
7 0.	As before; slight shower.	W
8 0.	Scud	W
9 0.	Light rain.	H
10 0.	Id.	H
12 0.	Rain.	W
18 0.	Cirro-cumulo-strati and large cirro-cumuli, moving slowly +— mottled cirri.	W
19 0.	Id. id., and mottled cirri +— cirrous haze near horizon.	W
20 0.	Scud to S.: cirro-cumulo-strati.	W
21 0.	Scud, moving rather quickly +— dense cirrous clouds.	
22 0.	Mottled, ragged, and other kinds of scud +— dense cirro-cumuli and cirrous haze; electric-looking.	B
23 0.	Scud +— dense cirrous clouds.	
0 0.	Id. +— cirro-strati and linear cirri. [turned to N.	B
1 0.	Large masses of cirrous scud +— cumulo-strati on horizon; curled cirri to S. lying S. and N., the curl	
2 0.	Scud and loose cumuli +— cirri to S.	W
3 0.	Id. +— cumulo-strati on E. and S. horizon.	W
4 0.	Id.	W
5 0.	Id.	W
6 0.	Id.	W
7 0.	Cumuli and cumulo-strati on N. and S. horizon; fine cirri forming.	B
8 0.	Cirro-strati on horizon.	B
9 0.	Cumulo-strati and cirrous haze on E. and N. horizon.	B
10 0.	Cirro-strati on horizon to E. and N.; red to N.	W
11 0.	Cirro-cumulous scud, stationary; cirro-strati on horizon.	W
12 0.	Id.	W
13 0.	Id.; cirro-strati near horizon.	W
14 0.	Id., moving very slowly +— cirro-strati on E. and N. horizon; very thick to E.	D

Göttingen Mean Time of Observation.			Barometer Corrected.	Thermometers.			Anemometer.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Pressure.		Direction of Wind.		
							Max.	Pres.			
d.	h.	m.	in.	°	°	°	lbs.	lbs.			0—10.
June 21	15	0	29·771	46·7	45·0	1·7	0·0	0·0			7·5
	16	0	770	47·7	46·0	1·7	0·0	0·0		W.	8·5
	17	0	785	48·7	47·0	1·7	0·0	0·0		W by N.	8·5
	18	0	792	51·3	48·1	3·2	0·0	0·0		W by N.	8·5
	19	0	811	55·4	51·2	4·2	0·0	0·0		NW.	9·0
	20	0	813	57·0	51·0	6·0	0·0	0·0			9·0
	21	0	819	58·4	51·7	6·7	0·0	0·0		NW.	8·5
	22	0	818	59·4	52·2	7·2	0·0	0·0			9·0
	23	0	816	61·6	53·9	7·7	0·0	0·0		W by N.	8·0
June 22	0	0	822	61·0	52·1	8·9	0·0	0·0		W by N.	6·0
	1	0	825	61·3	53·0	8 3	0·0	0·0		NW by N.	6·5
	2	0	819	62·7	54·0	8·7	0·1	0·0		NW.	6·0
	3	0	816	64·6	54·0	10·6	0·2	0·0	SW by S.	NW.	6·0
	4	0	815	63·7	54·7	9·0	0·2	0·3	ENE.	NW.	4·0
	5	0	807	65·6	56·6	9·0	0·1	0·0		NW.	2·0
	6	0	804	64·0	54·8	9·2	0·0	0·0			1·0
	7	0	799	62·8	54·6	8·2	0·0	0·0		NW?	0·5
	8	0	815	60·8	54·2	6·6	0·0	0·0		NNW.	1·5
	9	0	830	56·2	51·8	4·4	0·3	0·3	NNE.		0·7
	10	0	837	52·3	49·1	3·2	0·3	0·2	NE by N.		0·7
July 5	0	0	29·510	62·9	60·3	2·6					10·0
	1	0	493								
	2	0	477	66·0	62·0	4·0					10·0
	3	0	448								
	4	0	431	62·7	60·4	2·3					10·0
	5	0	415								
	6	0	389	61·1	61·0	0·1					10·0
	7	0	337								
	8	0	303	58·5	57·8	0·7					10·0
	10	0	322	57·0	56·9	0·1					10·0
	18	0	272	56·8	55·5	1·3					10·0
	20	0	284	58·9	55·6	3·3					9·8
	21	0	297								
	22	0	287	61·6	57·1	4·5					9·5
	23	0	305								
July 6	0	0	306	63·0	58·0	5·0					9·8
	1	0	308								
	2	0	337	64·8	59·0	5·8					6·0
	3	0	369								
	4	0	406	61·8	55·3	6·5					9·8

OBSERVATIONS MADE AT BERWICK-UPON-TWEED.

July 5	3	40	29·670	58·8							
	4	0	667	58·8							
	4	35	661	56·6							
	5	0	655	56·7							
	5	30	642	55·6							
	5	45	662	56·1							
	6	0	661	56·6							
	8	5	541	54·8							
	8	30	531	55·1							
	9	0	546	55·1							

July 5—6. The above observations were made at the end of the pier at Berwick for the purpose of determining the height of the barometer at Makerstoun above the level of the sea, but were rendered valueless for that purpose by the occurrence of a thunder-storm. Height of the cistern of the barometer at the Berwick pier above the mean level of the sea = 32 feet.

h.	m.	SPECIES OF CLOUDS, &c.	Observer's Initial.
15	0.	Cirro-cumulous scud ← cumulo-strati on E. and N. horizon.	W
16	0.	Cirrous scud ← cirri; cirro-strati near E. horizon; clouds tinged with red to NE.	W
17	0.	Scud and loose cumuli ← cumulo-strati to S.; cirri to N.	W
18	0.	Cirro-cumulous scud ← cirro-cumuli and woolly cirri; cumulo-strati on E. and S. horizon.	W
19	0.	Scud ← cirro-cumuli, cirro-strati.	H
20	0.	Cirro-strati diverging from NW.; dark cumuli to N.; cirro-cumuli to E. and S.	H
21	0.	Scud ← cirro-cumuli.	H
22	0.	Cirro-cumulous-cirrous-edged cumuli; fine linear cirri.	H
23	0.	As before.	H
0	0.	Scud and cumuli ← cirrous haze on E. horizon.	W
1	0.	Id.	H
2	0.	Cirrous-edged cumuli ← masses of woolly cirri; the temperature has been as high as 65° since last hour.	B
3	0.	Id.	W
4	0.	Id., in detached masses ← masses of cirro-cumuli to E.	W
5	0.	Id.	W
6	0.	Patches of cumuli on horizon.	H
7	0.	Patches of scud ← cumuli on horizon.	B
8	0.	Cirrous scud.	D
9	0.	Cirri and cumuli.	D
10	0.	Red and gray cirro-cumuli to N.; hazy to E.	D
0	0.	Scud; dense cirro-stratus; a few drops of rain.	W
1	0.		W
2	0.	Id.; id.; hazy.	W
3	0.		W
4	0.	Id.; id.	W
5	0.		W
6	0.	Scud, cirrous clouds; heavy thunder-showers.	W
7	0.		W
8	0.	Thunder-storm. (See *Daily Observations.*)	W
10	0.	Id.	W
18	0.	Scud; cirrous clouds and haze.	W
20	0.	Id.; id.	W
21	0.		W
22	0.	Scud and loose cumuli.	W
23	0.		W
0	0.	Id.; patches of cirri.	W
1	0.		W
2	0.	Id.	W
3	0.		W
4	0.	Id.	W
3	40.		B
4	0.		B
4	35.		B
5	0.	Thunder and rain.	B
5	30.		B
5	45.		B
6	0.		B
8	5.		B
8	30.		B
9	0.		B

Göttingen Mean Time of Observation.				BAROMETER Corrected.	THERMOMETERS.			ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Pressure.		Direction of Wind.		
								Max.	Pres.			
	d.	h.	m.	in.	°	°	°	lbs.	lbs.			0–10.
July	5	22	0	29·532	60·0							
		22	30	517	60·6							
		23	0	527	60·9							
		23	30	529	61·1							
July	6	0	0	531	61·3							
		0	30	524	61·6							
		1	0	525	61·7							
		1	30	526	63·3							
		2	0	526	62·7							
July	19	10	0	29·490	51·0	49·7	1·3	0·1	0·0		W.	10·0
		11	0	498	51·4	50·0	1·4	0·0	0·0			9·9
		12	0	497	50·0	49·0	1·0	0·0	0·0			9·7
		13	0	486	48·7	48·0	0·7	0·0	0·0			9·9
		14	0	479	49·8	48·7	1·1	0·0	0·0			10·0
		15	0	458	48·7	47·8	0·9	0·0	0·0			9·9
		16	0	450	46·7	45·9	0·8	0·0	0·0		W.	8·0
		17	0	444	46·0	45·2	0·8	0·0	0·0		W by S.	4·0
		18	0	442	47·5	45·5	2·0	0·0	0·0		NW ?	9·8
		19	0	427	50·0	47·2	2·8	0·3	0·2	SW by W.		9·9
		20	0	409	51·3	48·5	2·8	0·4	0·2	SW.	NW ?	10·0
		21	0	389	54·0	50·8	3·2	0·5	0·3	SW.	W by S.	10·0
		22	0	373	53·6	50·6	3·0	0·6	0·4	SW.	WSW.	10·0
		23	0	356	51·6	49·9	1·7	0·6	0·3	SW.		10·0
July	20	0	0	326	51·2	50·1	1·1	0·5	0·4	SW by S.		10·0
		1	0	287	52·2	51·2	1·0	0·4	0·7	SW.		10·0
		2	0	260	53·8	52·2	1·6	0·6	0·2	SW.	W.	10·0
		3	0	239	55·0	52·6	2·4	1·1	0·8	WSW.		10·0
		4	0	228	55·9	53·0	2·9	1·3	0·3	SW.	W by S.	10·0
		5	0	215	55·9	53·1	2·8	0·7	0·2	SW.	W.	10·0
		6	0	205	56·4	53·0	3·4	0·8	0·4		W.	10·0
		7	0	212	55·7	52·1	3·6	1·3	1·0		W.	10·0
		8	0	214	55·1	52·0	3·1	1·0	0·8	WSW.	WNW.	9·0
		9	0	221	54·8	51·4	3·4	0·9	0·2	SW by S.	WNW : NW.	7·0
		10	0	232	52·7	50·8	1·9	0 9	0·5	W by S.	NW.	7·0
Aug.	25	10	0	29·545	56·6	54·9	1·7	0·2	0·0	SW by S.		3·5
		11	0	571	55·6	54·1	1·5	0·2	0·0	SW by S.		6·0
		12	0	578	52·8	52·2	0·6	0·0	0·0			1·5
		13	0	580	50·7	50·4	0·3	0·0	0·0			0·5
		14	0	592	49·0	48·7	0·3	0·0	0·0			0·7
		15	0	592	48·8	48·0	0·8	0·0	0·0			1·0
		16	0	599	47·5	47·5	0·0	0·0	0·0			1·5
		17	0	603	49·0	48·7	0·3	0·0	0·0			3·5
		18	0	608	50·2	49·8	0·4	0·0	0·0		SSW ? : SSW.	5·0
		19	0	621	48·6	48·6	0·0	0·0	0·0			1·7
		20	0	622	53·2	51·8	1·4	0·0	0·0			1·0
		21	0	619	57·0	55·0	2·0	0·1	0·0		SW.	2·0
		22	0	616	61·2	57·9	3·3	0·6	0·3	SSW.	SW.	5·0
		23	0	615	62·9	57·6	5·3	0·5	0·1	SW by S.	SW.	8·0
Aug.	26	0	0	614	64·0	58·0	6·0	0·6	0·1	SW.	SW.	9·0
		1	0	610	64·3	58·2	6·1	0·4	0·2	SW by S.	SW by S.	7·0
		2	0	604	65·2	59·0	6·2	0·2	0·1	SW.	SW.	8·0
		3	0	601	59·0	57·2	1·8	0·1	0·0		SW.	10·0
		4	0	616	53·4	53·3	0·1	0·4	0·0	SW.	SW.	10·0
		5	0	608	54·9	54·5	0·4	0·0	0·0		SW.	10·0
		6	0	625	53·7	53·4	0·3	0·3	0·4	WSW.	SW.	9·8
		7	0	643	53·9	52·9	1·0	0·2	0·1	SW.	WSW.	7·0

h.	m.	SPECIES OF CLOUDS, &c.	Observer's Initial.
22	0.		B
22	30.		B
23	0.		B
23	30.		B
0	0.		B
0	30.		B
1	0.		B
1	30.		B
2	0.		B
10	0.	Scud.	B
11	0.	Id.	B
12	0.	A streak of light to NNE.	H
13	0.	Id.	H
14	0.	Scud.	D
15	0.	Id.; very red to E.	B
16	0.	Cirro-cumulous scud; sky red to E.	B
17	0.	Id. ← linear cirri; scud on Cheviot.	B
18	0.	Scud ← cirro-strati on E. horizon.	H
19	0.	Id. ← id.	H
20	0.	Id.	H
21	0.	Id. ← cirrous clouds.	W
22	0.	Id.; light rain.	W
23	0.	Rain.	W
0	0.	Id.	W
1	0.	Id.	W
2	0.	Scud; light rain.	W
3	0.	Id.; id.	W
4	0.	Id.	W
5	0.	Id.; passing showers.	B
6	0.	Id.; the sun's disc just visible through thick cirrous haze.	B
7	0.	Id.	D
8	0.	Id. ← cirrous clouds.	D
9	0.	Loose scud: cirro-cumuli and cirrous scud.	W
10	0.	Scud ← cirro-cumuli and cirrous clouds; dark mass of scud to E.	W
10	0.	Scud.	W
11	0.	Cirrous clouds and cirro-strati.	B
12	0.	Loose cumuli?; cirro-strati.	B
13	0.	Cirro-strati.	B
14	0.	Id.	D
15	0.	Id.; a small patch of cumulus to S.	D
16	0.	Cirrous haze, linear cirri, and cirro-strati.	B
17	0.	Fine linear cirri and cirrous haze, becoming thick to E.	B
18	0.	Cirrous scud to W.: feathered and woolly cirri to S. ← thick mass of linear cirri and cirrous haze to E.	B
19	0.	Nearly as before.	D
20	0.	Cirri and haze.	D
21	0.	Masses of scud ← cirro-strati to W.; cirrous haze on E. horizon.	W
22	0.	Scud and loose cumuli.	W
23	0.	Id. ← cirrous clouds to W.	W
0	0.	Id. ← id.	W
1	0.	Scud ← cirro-cumuli and cirro-strati.	H
2	0.	Scud and cumuli; dark scud to SW.	H
3	0.	Dark electric scud; thunder; a shower lately and a heavy one immediately.	W
4	0.	Scud ← thick cirrous haze.	W
5	0.	Thick, nearly homogeneous cirrous mass ← patches of scud near horizon.	W
6	0.	Scud ← cumuli on S. horizon; heavy shower.	W
7	0.	Cirrous scud ← cirro-strati and scud to E.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.			ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Pressure.		Direction of Wind.		
							Max.	Pres.			
d.	h.	m.	in.	°	°	°	lbs.	lbs.			0–10.
Aug. 26	8	0	29·651	50·9	50·3	0·6	0·4	0·0			2·5
	9	0	678	49·8	49·3	0·5	0·0	0·0			1·0
	10	0	697	51·0	50·3	0·7	0·2	0·2	SW.		0·3
Sept. 18	12	0	29·988	47·7	46·8	0·9	0·1	0·0			3·0
Sept. 20	10	0	29·790	59·3	57·8	1·5	1·2	0·3			1·0
	11	0	783	59·7	58·2	1·5	0·8	0·5		WSW ?	6·0
	12	0	770	58·9	57·9	1·0	0·5	0·3			1·5
	13	0	769	59·6	58·3	1·3	1·0	0·3			2·5
	14	0	769	59·0	57·6	1·4	0·4	0·1	SW.		1·0
	15	0	779	58·0	56·7	1·3	0·2	0·2	WSW.		3·0
	16	0	776	59·2	56·4	2·8	0·3	0·3	SW.		1·5
	17	0	775	58·8	56·4	2·4	0·6	0·1	SW.		3·0
	18	0	797	59·7	56·6	3·1	0·6	0·1		W by S.	9·5
	19	0	813	59·7	56·7	3·0	0·8	0·5	WSW.	W.	9·5
	20	0	833	60·7	57·4	3·3	0·9	0·3	SW.		9·7
	21	0	862	62·2	58·7	3·5	0·5	0·0		W.	8·0
	22	0	874	63·5	59·0	4·5	0·3	0·3	W.	W.	7·0
	23	0	893	63·0	58·0	5·0	0·5	0·4	NW by N.	W.	7·0
Sept. 21	0	0	908	64·3	58·0	6·3	1·0	0·7	NW.	W by N.	3·0
	1	0	923	63·6	57·2	6·4	0·6	0·5	WSW.		3·5
	2	0	935	63·4	56·5	6·9	0·9	0·5	W.	W by N.	2·0
	3	0	944	64·2	57·0	7·2	0·4	0·2		WNW.	1·0
	4	0	958	64·9	57·6	6·3	0·3	0·1			0·5
	5	0	971	62·9	57·5	5·4	0·4	0 3	NNW.		1·5
	6	0	29·990	60·9	55·8	5·1	0·2	0·0			0·2
	7	0	30·008	56·3	53·6	2·7	0·0	0·0			0·5
	8	0	042	51·1	50·1	1·0	0·0	0·0			0·0
	9	0	073	48·0	47·7	0·3	0·0	0·0			0·0
	10	0	082	47·2	46·1	1·1	0·0	0·0			0·0
	11	0	099	49·1	47·9	1·2	0·0	0 0			0·0
	12	0	109	47·0	46·2	0·8	0·0	0 0			0·0
	13	0	118	45·3	44·8	0·5	0·0	0·0			0·0
	14	0	145	44·6	44·3	0·3	0·0	0·0			0·0
	15	0	148	43·2	43·0	0·2	0·0	0·0			0·0
	16	0	162	43·2	42·7	0·5	0·0	0 0			0·0
	17	0	167	42·4	42·3	0·1	0·0	0·0			0·0
	18	0	190	41·9	41·8	0·1	0·0	0·0			0·1
	19	0	210	40·8	40·8	0·0	0·0	0·0			0·5
	19	30	225	42·6	42·0	0·6	0·0	0·0		NE.	2·0
	20	0	231	45·7	45·0	0·7	0·0	0·0			0·8
	21	0	248	49·2	48·1	1·1	0·0	0·0			0·1
	22	0	264	52·4	51·0	1·4	0·0	0·0			0·0
	23	0	267	56·6	54·4	2·2	0·0	0·0			0·1
Sept. 22	0	0	266	59·4	56·0	3·4	0·1	0·0	WNW ?		0·0
	1	0	261	63·0	58·7	4·3	0·0	0·0			0·0
	2	0	250	66·2	59·3	6·9	0·0	0·0			0·0
	3	0	244	68·8	61·7	7·1	0·0	0·0			0·2
	4	0	244	69·7	60·3	9·4	0·0	0·0			0·2
	5	0	246	69·2	61·7	7·5	0·0	0·0			0·2
	6	0	264	64·1	60·3	3·8	0 0	0·0			0·2
	7	0	273	60·0	58·3	1·7	0·1	0·0			0·0
	8	0	279	55·3	55·0 ?	0·3 ?	0·1	0·0	NE.		0·3
	9	0	288	53·3	52·1	1·2	0·0	0·0			0·0
	10	0	301	51·0	49·7	1·3	0·0	0·0			0·0
Oct. 18	10	0	30·014	30·3	29·6	0·7	0·0	0·0			0·0

Quantity of Clouds.			SPECIES OF CLOUDS, &c.	Observer's Initial.
0–10.	h.	m.		
2·5	8	0.	Scud and cirrous clouds near horizon.	W
1·0	9	0.	Id.	W
0·3	10	0.	Scud.	W
3·0	12	0.	Faint Aurora.	
1·0	10	0.	Cirro-strati to N.	D
6·0	11	0.	Scud ← cirro-strati.	D
1·5	12	0.	Cirro-strati.	D
2·5	13	0.	Id.	D
1·0	14	0.	Id. and scud. 14h 35m. Bright Auroral light from NW. by N. to N., extending from the horizon to about 12° altitude; no streamers or pulsations visible.	W
3·0	15	0.	Scud. The Aurora has disappeared.	W
1·5	16	0.	Masses of scud.	W
3·0	17	0.	Id.; cirro-strati on E. horizon.	W
9·5	18	0.	Scud ← cirro-strati on E. horizon.	D
9·5	19	0.	Id. ← id.	W
9·7	20	0.	Id. ← cirrous clouds.	W
8·0	21	0.	Id. ← feathered and woolly cirri.	W
7·0	22	0.	Id. ← id.	W
7·0	23	0.	Id. ← cirro-cumuli.	H
3·0	0	0.	Cirrous-edged and loose cumuli ← curled, feathered, and mottled cirri.	B
3·5	1	0.	Masses of loose cumuli ← woolly and curled cirri.	H
2·0	2	0.	Masses of scud ← cirri and cirro-strati to E.	W
1·0	3	0.	Loose cumuli ← cirro-strati to S.	B
0·5	4	0.	Id. ← id.	D
1·5	5	0.	Loose patches of scud; cumuli on S. horizon; haze on E. horizon.	D
0·2	6	0.	Cirro-strati on S. horizon; cirrous haze on E. horizon.	B
0·5	7	0.	Thick cirrous haze to E.	W
0·0	8	0.	Clear.	B
0·0	9	0.	Id.	H
0·0	10	0.	Id.	H
0·0	11	0.	Id.	H
0·0	12	0.	Id.	H
0·0	13	0.	Id.	H
0·0	14	0.	Id.	H
0·0	15	0.	Id.	H
0·0	16	0.	Id.	H
0·0	17	0.	Id.	H
0·1	18	0.	A streak of cirro-stratus to NE.; light fog.	B
0·5	19	0.	Foggy; cirro-strati to NE., moving down E. horizon.	B
2·0	19	30.	Sky covered with scud.	B
0·8	20	0.	Cirrous scud to N. and NE.	B
0·1	21	0.	Strips of hazy cirro-stratus on E. horizon.	B
0·0	22	0.	Clear.	W
0·1	23	0.	A small patch of scud to NE.	W
0·0	0	0.	Clear.	W
0·0	1	0.	Id.	W
0·0	2	0.	Id.	W
0·2	3	0.	Cirro-strati to NW.	W
0·2	4	0.	A few patches of hazy cirro-stratus to NNW.	W
0·2	5	0.	Id.	W
0·2	6	0.	Id.	W
0·0	7	0.	Clear.	W
0·3	8	0.	Patches of cirro-strati to NNW.	W
0·0	9	0.	Clear.	W
0·0	10	0.	Id.	W
0·0	10	0.	Id.	W

Göttingen Mean Time of Observation.				BAROMETER Corrected.	THERMOMETERS.			ANEMOMETER.			Clouds moving from	Quantity of Clouds.
					Dry.	Wet.	Diff.	Pressure.		Direction of Wind.		
								Max.	Pres.			
	d.	h.	m.	in.	°	°	°	lbs.	lbs.			0–10.
Oct.	18	11	0	30·029	30·0	28·3	1·7	0·0	0·0			0·0
		12	0	041	28·0	......	...	0·0	0·0			0·0
		13	0	061	26·6	......	...	0·0	0·0			0·0
		14	0	078	26·0	......	...	0·0	0·0			0·0
		15	0	090	23·7	23·7	0·0	0·0	0·0			0·2
		16	0	102	23·9	23·4	0·5	0·0	0·0			0·0
		17	0	115	23·9	23·5	0·4	0·0	0·0			0·5
		18	0	120	24·0	23·6	0·4	0·0	0·0			0·0
		19	0	139	24·0	24·0	0·0	0·0	0·0			0·0
		20	0	153	26·2	26·0	0·2	0·0	0·0			8·0
		21	0	151	29·1	27·2	1·9	0·0	0·0			7·0
		22	0	152	33·0	31·0	2·0	0·0	0·0		W.	7·0
		23	0	154	35·3	32·2	3·1	0·0	0·0	W.	W.	3·0
Oct.	19	0	0	161	40·4	35·9	4·5	0·1	0·1	W by S.	WNW.	2·0
		1	0	147	42·9	38·7	4·2	0·4	0·3	WSW.		0·3
		2	0	124	44·4	39·3	5·1	0·3	0·2	W by S.		0·2
		3	0	115	45·0	39·5	5·5	0·3	0·2	W by S.		0·2
		4	0	110	44·7	39·8	4·9	0·4	0·4	WSW.		0·2
		5	0	104	41·9	38·9	3·0	0·3	0·2			2·0
		6	0	107	39·6	37·2	2·4	0·3	0·1	SW.		0·5
		7	0	098	38·3	36·6	1·7	0·1	0·0			4·0
		8	0	079	39·2	37·2	2·0	0·1	0·0			4·0
		9	0	069	36·7	35·3	1·4	0·1	0·0			2·0
		10	0	061	37·2	36·0	1·2	0·0	0·2			1·0
Oct.	27	22	0	28·522	45·9	45·2	0·7	2·7	2·0	E by N.	E by S.	10·0
		23	0	464	46·1	45·6	0·5	2·2	1·5	NE.	E by N.	10·0
		23	30	427								
Oct.	28	0	0	417	48·0	47·0	1·0	2·6	0·8	E.	ESE.	10·0
		0	5	415								
		0	30	422								
		1	30	431								
		2	0	423	45·1	43·0	2·1	1·5	0·8	E.	ESE.	9·9
		3	30	425								
		4	0	424	43·7	41·8	1·9	1·3	0·3	NE.	E by N : E.	9·9
Nov.	2	12	0	29·571	33·0	32·0	1·0	0·0	0·0		SSE.	1·0
Nov.	24	10	0	29·460	34·0	32·6	1·4	0·0	0·0			10·0
		11	0	465	30·8	......	...	0·0	0·0			0·2
		12	0	477	34·0	32·0	2·0	0·0	0·0			10·0
		13	0	476	34·2	33·7	0·5	0·0	0·0			9·5
		14	0	474	34·8	34·1	0·7	0·0	0·0			10·0
		15	0	460	33·9	33·3	0·6	0·0	0·0			9·0
		16	0	446	34·0	33·6	0·4	0·0	0·0			8·5
		17	0	430	28·3	......	...	0·0	0·0			0·5
		18	0	430	29·5	......	...	0·0	0·0			2·0
		19	0	435	30·0	......	...	0·0	0·0			9·5
		20	0	429	29·8	......	...	0·0	0·0			10·0
		21	0	424	30·8	......	...	0·0	0·0		S.	10·0
		22	0	423	33·3	31·6	1·7	0·0	0·0			10·0
		23	0	422	33·7	32·2	1·5	0·0	0·0			10·0
Nov.	25	0	0	390	34·3	33·6	0·7	0·0	0·0		W.	9·0
		1	0	368	35·3	34·4	0·9	0·0	0·0		S.	9·0
		2	0	383	36·7	35·6	1·1	0·0	0·0			9·7
		3	0	385	35·7	35·0	0·7	0·0	0·0		W : NW.	10·0
		4	0	387	35·3	34·7	0·6	0·0	0·0		W.	9·7
		5	0	364	31·0	......	...	0·0	0·0			2·0

h.	m.	SPECIES OF CLOUDS, &c.	Observer's Initial.
11	0.	Clear.	W
12	0.	Id.	W
13	0.	Id.	W
14	0.	Id.	D
15	0.	Cirro-strati to E.	W
16	0.	Clear.	W
17	0.	Slight cirrous haze to E.; faint lunar halo.	W
18	0.	Cirro-strati to E.	W
19	0.	Id., tinged with red.	H
20	0.	Cirro-strati on horizon; cumuli.	H
21	0.	Cirro-cumuli; haze on horizon.	H
22	0.	Woolly cirri, moving slowly ← patches of mottled cirri.	H
23	0.	Diffuse and mottled cirri.	B
0	0.	Woolly, mottled, and linear cirri and cirro-strati.	W
1	0.	Cirro-strati to S.	W
2	0.	Id.	B
3	0.	Cirrous haze; patches of scud to S.	B
4	0.	Cirro-strati and cirrous haze on NNE. horizon.	W
5	0.	Haze with patches of scud.	D
6	0.	Cirrous haze and cirro-strati.	W
7	0.	Cirrous clouds and haze.	C
8	0.	Id.	D
9	0.	Cirrous clouds on horizon.	W
10	0.	Cirro-strati and cirrous haze.	B
22	0.	Loose scud; drizzle; Scotch mist.	W
23	0.	Scud; light drizzle.	W
23	30.		
0	0.	Loose scud.	W
0	5.		W
0	30.		W
1	30.		W
2	0.	Scud and loose cumuli, breaking to E.	W
3	30.		
4	0.	Loose scud: woolly cirri ← diffuse cirri to W.	B
12	0.	Patches of scud ← cirro-strati to N.	
10	0.	Sky covered with thin clouds.	W
11	0.	Scud?	W
12	0.	Id.	H
13	0.	Clear on E. horizon.	H
14	0.		D
15	0.	Cirrous clouds?	B
16	0.	Scud?; sky to E. and S.	B
17	0.	Clouds on horizon.	B
18	0.	Id.; cirrous haze.	H
19	0.	Cirrous haze; stars of the third magnitude are visible in the zenith.	B
20	0.	Woolly cirri and cirrous haze; cirro-strati to S. and E.	B
21	0.	Thick woolly scud ← cirro-strati to NE.; cirrous haze.	B
22	0.	Snowing.	H
23	0.	Thick cirrous mass; cirro-cumulous scud below to N.	W
0	0.	Large woolly cirro-cumuli, moving slowly.	W
1	0.	Cirrous scud and loose cumuli.	W
2	0.	Id.	W
3	0.	Massive, zigzag, thunderbolt cirro-strati, radiating from S.: woolly cirri.	H
4	0.	Cirrous scud and woolly cirri.	W
5	0.	Flame cirri to S.; cirrous haze.	W

Göttingen Mean Time of Observation.			BAROMETER Corrected.	THERMOMETERS.			ANEMOMETER.			Clouds moving from	Quantity of Clouds.
				Dry.	Wet.	Diff.	Pressure.		Direction of Wind.		
							Max.	Pres.			
d.	h.	m.	in.	°	°	°	lbs.	lbs.			0–10.
Nov. 25	6	0	29·364	30·2	……	…	0·0	0·0			2·0
	7	0	375	28·3	……	…	0·0	0·0			0·5
	8	0	366	29·3	……	…	0·0	0·0			10·0?
	9	0	368	31·7	31·7	0·0	0·0	0·0			10·0
	10	0	339	30·4	……	…	0·0	0·0			7·0
Dec. 10	13	0	29·942	46·8	44·7	2·1	0·5	0·2	SSW.	SW.	10·0
	14	0	29·939	47·0	44·8	2·2	0·2	0·2	SSW.		10·0
Dec. 11	12	0	30·087	47·0	46·1	0·9	0·1	0·0			10·0
Dec. 20	10	0	29·891	47·7	45·6	2·1	0·5	0·2	SW.		10·0
	11	0	893	48·3	46·3	2·0	0·9	0·7	SW.		10·0
	12	0	896	49·3	46·8	2·5	1·5	0·2	SW ?		9·0
	13	0	899	48·2	46·4	1·8	0·4	0·3	SSW.		10·0
	14	0	872	47·6	46·1	1·5	1·0	1·5	SW ?		10·0
	15	0	870	48·3	46·9	1·4	1·0	0·5	SSW.		10·0
	16	0	892	48·4	47·9	0·5	0·8	0·6	SW.		10·0
	17	0	927	46·4	45·8	0·6	1·0	0·1	W.		10·0
	18	0	940	45·5	44·5	1·0	0·0	0·0			7·0
	19	0	971	39·9	39·7	0·2	0·0	0·0			0·2
	20	0	29·994	39·0	39·0	0·0	0·0	0·0		W.	0·2
	21	0	30·022	42·1	41·5	0·6	0·0	0·0			0·5
	22	0	055	38·9	38·7	0·2	0·1	0·0	SW.	WNW ?	0·2
	23	0	073	43·0	41·5	1·5	0·1	0·1			0·2
Dec. 21	0	0	077	42·9	41·8	1·1	0·1	0·1	SSW.	WNW.	5·0
	1	0	081	43·4	42·2	1·2	0·1	0·2	SW by S.		3·0
	2	0	086	45·0	43·6	1·4	0·2	0·0			0·5
	3	0	101	43·5	42·5	1·0	0·0	0·0		W by N.	4·0
	4	0	103	40·8	40·6	0·2	0·0	0·0			1·5
	5	0	113	37·4	37·2	0·2	0·0	0·0			2·0
	6	0	109	37·1	37·0	0·1	0·0	0·0			2·0
	7	0	117	38·7	38·5	0·2	0·0	0·0			9·7
	8	0	105	39·6	39·3	0·3	0·0	0·0			3·0
	9	0	083	39·1	38·7	0·4	0·0	0·0			0·5
	10	0	066	38·6	38·0	0·6	0·0	0·0			0·5
	11	0	061	39·0	38·8	0·2	0·0	0·0			9·5
	12	0	046	39·4	39·2	0·2	0·0	0·0			4·0
	13	0	018	40·0	39·7	0·3	0·0	0·0			9·7
	14	0	30·002	40·7	40·4	0·3	0·0	0·0			7·0
	15	0	29·979	41·3	40·9	0·4	0·0	0·0			10·0
	16	0	957	45·3	44·7	0·6	0·2	0·2	SSW.		9·0
	17	0	940	46·1	45·3	0·8	0·9	1·0	S by W.	W ?	3·0
	18	0	925	44·2	43·7	0·5	0·3	0·0		WSW ?	3·0
	19	0	897	44·1	43·6	0·5	0·0	0·0		WSW ?	9·5
	21	0	845	46·6	44·7	1·9	0·7	0·5	SSW.	SW : SW.	8·0
	23	0	808	50·0	47·7	2·3	3·7	…		SW by S.	10·0
Dec. 22	0	0	759	51·0	48·6	2·4	2·8	1·4	SSW.	SSW.	10·0
	1	0	718	50·0	49·3	1·5	2·1	1·4	SSW.	SW by S.	10·0
	2	0	691	53·0	51·0	2·0	4·5	3·4	SW by S.	SW by S.	10·0
	3	0	659	53·8	51·6	2·2	4·8	3·1	SSW.	SW ½ S : SW ½ W.	10·0
	4	0	636	53·7	51·8	1·9	6·0	4·8	SW by S.	SW ½ W.	7·0
	5	0	647	54·2	50·9	3·3	5·4	5·4	SSW.	SW : WSW.	9·0
	6	0	631	53·7	50·5	3·2	7·3	5·6	SSW.	SW ?	7·0
	7	0	665	52·9	49·1	3·8	5·9	3·7	SW by S.	SW.	2·5
	8	0	660	52·2	48·2	4·0	5·8	3·9	SW by S.		7·5
	10	0	710	51·0	46·8	4·2	4·7	2·1	SW by S.		10·0

h.	m.	SPECIES OF CLOUDS, &c.	Observer's Initial.
6	0.	Foggy; cirrous clouds.	D
7	0.	Cirro-strati to S. and E.	H
8	0.	Thick fog.	B
9	0.	Id.	D
10	0.	Id.	W
13	0.	Scud.	B
14	0.		
12	0.		
10	0.	Scud.	W
11	0.	Id.	W
12	0.	Id.	W
13	0.	Id.	D
14	0.	Slight rain.	D
15	0.	Id.	D
16	0.	Rain heavier.	D
17	0.	Light rain.	D
18	0.	Strata of clouds lying ENE. to WSW.	B
19	0.	Cirro-strati on E. horizon.	B
20	0.	Scud to S. ← ribbed cirri; cirro-strati on E. horizon.	B
21	0.	Patches of scud on N. and S. horizon; woolly cirri; cirro-strati to S.	B
22	0.	Patches of scud ← cirro-strati and cirrous haze to SE.	W
23	0.	Patches of cirrous clouds and haze.	H
0	0.	Woolly and linear cirri.	H
1	0.	Woolly and mottled cirro-strati on horizon.	H
2	0.	Patches of mottled and woolly cirri; cirrous haze and cirro-strati on horizon.	W
3	0.	Woolly cirri and thin woolly cirro-cumuli.	W
4	0.	Cirro-cumuli and woolly cirri to NW.; cirrous haze on horizon.	W
5	0.	Cirro-cumuli to W.; cirrous haze to E.; cirro-strati to N.	B
6	0.	Sheets of cirro-strati reaching from SSW. to E.	B
7	0.	Scud.	W
8	0.	Clouds on E. and S. horizon.	H
9	0.	Streaks of clouds.	W
10	0.	Id.	W
11	0.	Loose scud.	W
12	0.	Id.	W
13	0.	Id.	W
14	0.	Id.	W
15	0.	Id.	W
16	0.	Id.	W
17	0.	Id.	W
18	0.	Scud ← cirro-strati and cirrous haze to E.	B
19	0.	Id. ← id.	B
21	0.	Thin gray smoky scud: beautifully mottled cirri and bunches of woolly cirri, coloured orange-yellow ← linear cirri and cirro-strati to E.	B
23	0.	Scud.	B
0	0.	Id.	W
1	0.	Id. In strong gusts of wind the vane indicates SW. by S.	
2	0.	Id.	W
3	0.	Id.: masses of cirri.	
4	0.	Id.; clouds just clearing off.	B
5	0.	Two currents of scud.	
6	0.	Scud.	B
7	0.	Id.	
8	0.	Id.	W
10	0.	Id.	W

Göttingen Mean Time of Observations.			Temperature of Water.		
			Pump Wells.		River Tweed.
	d.	h.	Cottage.	Garden.	
			°	°	°
1842.					
Oct.	12	2	······	······	51·3
	14	2	······	······	50·3
	15	2	······	······	52·2
	17	2	······	······	49·6
	18	2	······	······	47·8
	20	2	······	······	40·1
	24	2	······	······	41·5
	25	2	······	······	37·8
	27	2	······	······	37·7
	28	2	······	······	40·0
	29	2	······	······	40·7
	31	2	······	······	43·6
Nov.	1	2	······	······	47·0
	2	1	······	48·6	······
	3	4	49·5	48·8	45·9
	5	4	49·3	48·9	41·5
	7	4	······	49·2	42·0
	12	4	48·7	48·3	42·0
	19	5	47·9	48·1	39·0
	28	4	47·2	48·0	41·0*
Dec.	19	4	46·9	48·3	40·9
1843.					
Jan.	2	4	46·1	48·0	······
	5	3	······	······	35·1
	11	4	45·4	47·2	32·6
	16	4	45·1	46·9	32·2
	24	3	······	······	41·3
	28	4	44·6	47·2	44·8
Feb.	4	4	44·3	46·7	32·3
	11	4	44·1	46·4	35·8
1843.					
Feb.	18	4	43·2	46·0	32·4
	27	4	42·9	45·8	36·1
March	4	4	42·7	45·8	37·1
	11	4	42·7	45·7	39·9
	18	4	42·8	45·9	44·2
	27	4	42·9	45·8	37·8
April	1	4	43·1	45·8	48·5
	8	4	43·5	46·1	45·3
	15	4	43·7	46·0	49·7
	22	4	44·0	46·2	51·3
	29	4	44·1	46·1	47·8
May	6	4	44·5	46·2	52·2
	13	4	45·0	46·7	54·7
	20	6	45·2	46·8	52·4
	29	4	45·7	47·1	50·4
June	3	4	45·9	47·7	47·6
	10	4	46·4	48·6	53·3
	17	7	46·6	49·5	65·4
	24	9	46·8	49·7	66·6
July	1	9	47·4	50·0	······
	3	8	······	······	58·0
	7	18	······	······	59·8
	8	4	47·7	50·2	······
	11	3	······	······	67·1
	15	4	48·5	50·5	66·7
	22	6	48·6	50·1	······
	29	4	48·8	50·0	60·8
Aug.	4	18	······	······	58·2
	5	4	49·4	49·9	······
	12	5	49·4	49·8	65·0
1843.					
Aug.	13	18	······	······	62·6
	14	7	······	······	66·8
	17	7	······	······	70·2
	18	7	······	······	70·6
	19	7	49·5	49·5	72·3
	29	4	50·1	49·6	······
	31	6	······	······	61·6
Sept.	2	8	50·3	49·6	······
	7	6	······	······	65·5
	8	7	······	······	66·1
	9	7	······	······	66·8
	11	4	50·6	49·7	65·6
	12	7	······	······	65·6
	18	22	50·6	49·5	······
	20	7	······	······	61·9
	21	4	······	······	63·3
	23	4	50·6	49·6	······
	25	1	······	······	57·4
	30	4	50·7	49·5	54·8
Oct.	7	4	50·7	49·5	55·6
	11	22	······	······	42·1*
	16	4	50·6	49·5	······
	21	6	50·5	49·3	······
	28	4	49·6	49·2	······
Nov.	4	4†	48·8	48·9	······
Dec.	2	4	46·7	48·5	······
	9	4	46·7	48·6	······
	16	4	46·7	48·7	······
	23	4	46·7	48·7	······
	30	4	46·7	48·6	······

* Tweed in flood.

† The thermometer used before this was broken.

ABSTRACTS OF THE RESULTS

OF THE

MAGNETICAL OBSERVATIONS,

MADE AT THE OBSERVATORY OF

GENERAL SIR T. M. BRISBANE, BART.,

MAKERSTOUN.

1843.

In order to avoid repetition, it may be remarked generally,—

First, That the results for the month of January are more imperfect than those for the succeeding months, as on the first week of 1843 only four daily observations were made, and on the second week only eight. Attempts have been made to render the means comparable and as complete as possible, by means of observations made at all the 24 hours in 1844: these will be found explained after the various Tables.

Second, In obtaining the hourly means for the month of January the first week's observations were wholly rejected.

Third, It is obvious that the daily means from the nine observations, whatever attempts at correction may have been made, are imperfect, and that the results deduced from these means cannot be expected to be so distinct as they would have been from twelve two-hourly observations.

Fourth, As no observations were made on Sundays, the places which the means for Sundays would have occupied have been filled up by the means of the three preceding and three succeeding days; these means are therefore weekly means, and may be considered as approximate means for the Sundays. They have been used in the summations having reference to the moon's position, as it was considered that the want of any means on these days would affect the accuracy of the results more seriously than the use of the approximations.

Fifth, The time used in all the Tables is Göttingen mean time *astronomical* reckoning; but in the ***Remarks*** on the Tables, Makerstoun mean time *civil* reckoning is used, unless the reverse is stated; thus 20ʰ in the Tables is equivalent to 7ʰ 10ᵐ A.M. in the Remarks.

TABLE I.—Mean Westerly Declination for each Civil Day, as deduced from the Nine Daily Observations, for each Week, and for each Month in the year 1843.

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′
1	[……]	25·15	24·67	25·46	23·18	25·74	26·29	22·45	22·71	[23·93]	18·92	17·48
2	27·67	25·32	24·98	[24·98]	……	26·43	[26·02]	22·41	23·28	23·76	20·73	20·03
3	26·49	25·22	24·92	25·76	24·04	27·07	26·66	22·55	[22·41]	25·04	21·95	[19·16]
4	26·77	24·28	25·43	26·22	24·87	[25·96]	26·79	23·11	20·03	24·01	21·95	19·23
5	27·01	[24·80]	[25·87]	25·09	24·01	25·82	26·78	22·26	23·20	24·20	[21·35]	19·44
6	27·08	21·34	25·95	27·98	22·15	25·01	23·99	[22·88]	22·12	22·71	22·60	21·46
7	24·26	26·41	28·51	24·52	[23·42]	25·70	23·45	22·15	20·80	22·97	21·31	20·52
8	[25·57]	26·25	25·43	24·54	23·54	25·34	27·42	21·90	21·42	[23·20]	19·56	20·14
9	25·48	26·58	25·50	[25·02]	22·82	24·17	[24·98]	25·27	22·71	23·04	20·12	20·70
10	25·24	26·35	24·84	24·42	23·13	25·67	26·28	22·91	[21·92]	23·27	19·32	[20·48]
11	24·33	25·11	24·81	23·87	24·40	[25·88]	24·72	22·69	23·45	23·02	19·10	20·13
12	23·73	[25·52]	[24·92]	24·78	25·00	26·09	24·00	22·93	22·63	23·03	[19·42]	20·86
13	24·85	24·06	26·54	25·10	24·20	25·27	24·25	[23·28]	20·54	24·09	19·99	20·54
14	25·55	26·28	24·21	24·90	[24·77]	28·75	22·24	23·52	20·39	23·73	18·90	20·72
15	[25·47]	24·72	23·60	24·12	25·45	28·37	23·97	24·25	20·30	[23·17]	19·08	20·73
16	26·73	24·66	23·36	[24·59]	25·95	28·33	[23·35]	23·41	20·41	22·66	19·16	20·58
17	25·63	25·70	24·20	24·56	23·62	28·14	23·84	23·17	[20·65]	22·96	19·26	[20·05]
18	26·35	24·92	25·98	25·07	24·28	[25·26]	22·16	23·64	20·33	22·56	19·87	19·63
19	28·64	[25·17]	[25·28]	23·77	24·19	23·05	23·67	24·01	21·18	19·33	[19·32]	18·85
20	29·34	24·47	25·76	22·72	23·29	21·56	22·22	[23·79]	21·27	21·62	19·45	19·77
21	27·84	25·25	25·73	23·82	[23·72]	22·11	23·73	23·20	19·97	21·84	18·73	18·24
22	[26·95]	26·01	26·63	23·70	23·84	……	23·33	26·66	21·66	[21·62]	19·47	18·30
23	24·80	25·71	25·90	[23·47]	22·66	……	[23·32]	22·04	21·35	22·32	18·92	18·29
24	25·03	28·69	25·13	23·74	24·05	27·90	20·57	21·24	[21·00]	22·23	19·27	[18·54]
25	26·06	25·97	24·80	23·45	24·95	[26·74]	26·13	22·82	20·32	22·37	18·81	18·49
26	25·48	[26·08]	[24·48]	23·38	24·18	26·52	23·96	21·88	21·02	20·14	[18·85]	19·06
27	26·21	25·70	24·89	23·84	23·09	26·19	23·74	[22·36]	21·66	21·36	18·72	18·84
28	25·51	25·75	23·75	23·19	[24·72]	26·37	22·80	23·30	24·78	21·28	18·92	20·43
29	[25·36]		22·40	23·05	24·98	23·14	22·81	23·02	22·74	[20·67]	18·49	18·38
30	24·99		23·36	[23·46]	26·23	26·46	[22·88]	21·88	23·24	21·95	17·31	18·51
31	24·85		24·02		24·91		23·05	23·11		20·35		[19·85]
Mean	26·00	25·41	25·01	24·44	24·12	25·80	24·19	23·03	21·67	22·53	19·61	19·59

The quantities in brackets are the means of the three preceding and of the three succeeding numbers; they are, therefore, the weekly means, and they may be considered as the approximate westerly declinations on the Sundays, whose place they occupy, and on which no observations were made.

The means for the first week in January are means of the four daily observations in that week corrected by −0′·84. The means in the second week are the means of the eight daily observations in that week corrected by −0′·14. These corrections were obtained by comparing the observations at the four and eight corresponding hours in 1844 with the observations at the nine hours corresponding to the observing hours in 1843.

ANNUAL PERIOD OF DECLINATION.

Differences of the mean westerly declination, deduced from the observations made in 1844 at the hours 18, 20, . . . 10, from that deduced from the 24 hourly observations made on each day (excepting Sundays) in that year.

24 Observations *minus* 9 Observations:—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
−0′·33	−0′·47	−0′·75	−0′·49	−0′·85	−0′·58	−0′·56	−0′·68	−0′·75	−0′·76	−0′·73	−0′·35

The *variation* of these differences is not sufficiently great to affect the character of the annual period, as deduced from the monthly means at the foot of the previous Table. When these quantities are subtracted from the monthly means of the nine observations in 1843 we obtain the following:—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
25′·67	24′·99	24′·26	23′·95	23′·27	25′·22	23′·63	22′·35	20·′92	21′·77	18′·88	19′·24

From these we see that the westerly declination diminishes very regularly till May, increases considerably from May to June, diminishes again regularly to November, with the exception of an increase in October, which, however, is nearly made up for by the more rapid diminution in November; in December there is a slight increase.

It will be found, Table III., that the retrogressive or secular change of westerly declination has a value of about 6′ in one year; if we add proportional parts of this to the different monthly means, the annual period will be more distinct. The monthly means will then be, when the secular change is thus eliminated:—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
25·67,	25·44,	25·26,	25·45,	25·27,	27·72,	26·63,	25·85,	24·92,	26·27,	23·88,	24·74.

These means are still affected by the varying torsion force of the suspension-thread,—the error due to this cause cannot be eliminated; it is probably greatest in the mean for June, in which month the suspension-thread broke. An examination of the variations of the plane of detorsion in several of the other months (see the notes to the Daily Observations of Magnetometers) will shew that the error from this cause is generally small; keeping this in view, if a curve be run freely through the projected means for the 12 months, there seems to be a minimum of westerly declination about March, and a maximum perhaps in July or August. Having an eye to the result for 1844, and also to the result for the horizontal and vertical components of intensity, I am inclined to believe that the *annual period of magnetic declination* will be found to consist of *a minimum at the vernal and a maximum at the autumnal equinox.*

The means for the four seasons are—

Spring.	Feb., March, and April, mean	25·38
Summer.	May, June, and July, mean	26·54
Autumn.	Aug., Sept., and Oct., mean	25·68
Winter.	Jan., Nov., and Dec., mean	24·76

These means indicate the maximum in Summer and the minimum in Winter; but there is little doubt that the mean for June is too high, and those for September, November, and December, too low.

After correcting the monthly means of the nine observations to the monthly means of twenty-four observations, the mean westerly declination for the year 1843 is found to be 25° 22′·85.

TABLE II.—Mean Variations of Westerly Declination, after Eliminating the Secular Change, with Reference to the Moon's Age, Declination, and Distance from the Earth, for 1843.

Moon's Age.	Variations of West Declination.	Moon's Age.	Variations of West Declination.	After Moon farthest North.	Variations of West Declination.	After Moon farthest North.	Variations of West Declination.	Before and after Perigee.	Variations of West Declination.	Before and after Apogee.	Variations of West Declination.
Day.	′	Day.	′	Day.	′	Day.	′	Day.	′	Day.	′
15	0·85	0	0·19	0	1·05	14	1·28	7	0·72	7	0·88
16	0·94	1	0·30	1	0·80	15	0·64	6	0·00	6	0·93
17	1·07	2	0·00	2	1·40	16	0·84	5	1·02	5	0·54
18	1·04	3	0·43	3	0·69	17	1·16	4	0·40	4	0·18
19	1·10	4	0·71	4	0·96	18	0·47	3	0·23	3	0·19
20	0·89	5	0·96	5	0·66	19	0·25	2	0·62	2	0·08
21	0·35	6	0·88	6	0·53	20	0·00	1	0·35	1	0·03
22	0·32	7	0·71	7	0·89	21	0·13	P	0·40	A	0·01
23	0·11	8	0·71	8	1·02	22	0·40	1	0·60	1	0·40
24	0·25	9	0·14	9	0·99	23	0·76	2	0·64	2	0·24
25	0·66	10	0·32	10	0·40	24	0·30	3	0·66	3	0·42
26	0·84	11	0·96	11	0·64	25	1·19	4	0·85	4	1·23
27	0·06	12	0·92	12	1·42	26	1·11	5	0·82	5	0·89
28	0·30	13	1·04	13	1·03	27	1·24	6	0·75	6	0·67
29	0·32	14	0·73					7	0·60	7	0·80

The above Table was formed from the daily means in Table I. in the following manner :—The mean westerly declination on the 12 days, between January 15. 1843 and January 4. 1844, on which the moon's age was 15 days, were summed together, similarly for 16 days old, 17 days old, . . . the means of these sums were then taken, and the differences from the lowest mean are given in the above Table. In these summations the approximate means for Sundays were used, as it was conceived that the want of any means on these days would affect the results more seriously than the use of the approximations. As in some lunations the 29th day was awanting, the mean of the declinations on the 28 day and the day of new moon was summed instead.

For the variations of westerly declination with reference to the moon's meridian altitude, the day on which the moon was farthest north was numbered 0, and the days after this were numbered up to 26 or 27, the day before the moon again attained its greatest north declination ; if there were only 26 days the mean of the declinations on the 26th and 0th day was substituted for the mean on the 27th day ; the mean westerly declination was then obtained for all the days of the same number from January 13. 1843 till January 3. 1844, each mean being the mean of the westerly declinations on 13 days ; the differences from the lowest were then taken, and are inserted above.

For the variation of westerly declination with respect to the moon's distance from the earth, it will be seen in the foregoing Table that the days before and after apogee and perigee are numbered from 1 up to 7 ; in some instances there are only 5 days before apogee and 5 days after perigee, or before perigee and after apogee ; in these cases, for example, the 5th day before apogee has been numbered also as the 6th and 7th after perigee, and the 5th after perigee as the 6th and 7th before apogee ; when there are 11 days between apogee and perigee, or perigee and apogee, the 6th is counted as the 6th and 7th before and after ; when there are 12 days between, the 6th before apogee is counted as the 7th after perigee, and *vice versa;* when there are 13 days, the 7th day is counted as the 7th before and after, and when there are 15 or 16 days, the mean of the declinations for the 7th and 8th days is used as the mean for the 7th. The mean westerly declinations for the days with similar numbers, between January 12. 1843 and January 5. 1844, were then obtained as in the previous cases, and the differences from the lowest mean are given in Table II. ; each number is the mean of 13. It would have simplified the summations, and this statement of them, to have rejected the means on the 8th, 7th, and 6th days (of themselves they would have been useless), but it seemed better to combine them with other means nearly similarly related to the distance of the moon than to throw them away.

After the summations for each of the above cases had been performed, and the means obtained, the secular change was eliminated at the rate of 0′·0165 *per diem.*

The above statement will apply to the similar summations for the horizontal and vertical components of magnetic force.

VARIATIONS OF WESTERLY DECLINATION WITH REFERENCE TO THE RELATIVE POSITIONS OF THE SUN, MOON, AND EARTH, AS INDICATED BY THE MOON'S AGE.

A glance at the numbers in the first portion, Table II., shews, with some irregularities, which may be expected where the effects of irregular causes have not been eliminated, the same result as is deduced from the means for the following groups, namely, *that there is a maximum of westerly declination when the Sun and Moon are in opposition, and a minimum when they are in conjunction.*

Means of Groups.

				′
19 days to	26 days,	8 days including	the Third Quarter, mean	0·56
27 ……	3 …	7 ……………	the New Moon, ……	0·23
4 ……	11 …	8 ……………	the First Quarter, ……	0·67
12 ……	18 …	7 ……………	the Full Moon, ……	0·94

The westerly declination also has its mean value at the quadratures.

VARIATIONS OF WESTERLY DECLINATION WITH REFERENCE TO THE MOON'S DECLINATION.

The second portion of Table II. gives the following :—

Means of Groups.

			′
4 days to	10 days,	7 days, including the Moon's passage of the Equator southwards, mean	0·78
11 ……	17	………………………… greatest south declination, ……	1·00
18 ……	24	………………………… passage of the Equator northwards, ……	0·33
25 ……	3	………………………… greatest north declination, ……	1·07

From these, and from the partial means, it appears *that a maximum of westerly declination occurs both when the moon has its greatest north and greatest south declination*, the maxima being nearly equal, and that *minima occur about the time at which the moon crosses the equator*, the principal minimum occurring when the moon is moving northwards.

VARIATIONS OF WESTERLY DECLINATION WITH REFERENCE TO THE MOON'S DISTANCE FROM THE EARTH.

The third portion of Table II. gives the following :—

Means of Groups.

	′
Perigee, 3 days before it and 3 days after it, mean	0·50
8 days about the mean distance, the Moon moving from the Earth, mean	0·69
Apogee, 3 days before it and 3 days after it, mean	0·20
8 days about the mean distance, the Moon approaching the Earth, mean	0·72

As the periods of Apogee and Perigee in 1843 are nearly the same as of the moon's passage of the equator, the results for the mean distance will be similar to those for the greatest north and south declination. It will require two or three year's results to determine to which period the changes are referable. As it is my *belief* that the apparent variations of the magnetical elements with the moon's distance are really due to variations of declination, I have not in this, or in succeeding cases, pointed out the conclusions to which the means lead.

TABLE III.—Mean Westerly Declination at the Observation Hours for each Month in 1843.

Month.	18.	20.	22.	23.	0.	2.	4.	6.	8.	10.
1843.	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′	25° ′
January	24·29	24·96	24·58		27·50	28·95	27·13	25·85	25·04	24·03
February	23·94	24·21	24·71		27·84	29·41	27·65	25·92	23·97	21·06
March	22·65	23·14	22·83		27·15	29·78	28·52	25·14	24·05	21·85
April	21·36	20·67	22·78		27·78	31·19	28·37	24·06	22·32	21·45
May	20·76	19·79	21·95		27·05	29·72	27·05	24·55	23·63	22·54
June	21·69	20·56	23·39		28·91	31·70	29·52	26·15	25·34	25·00
July	20·44	20·09	22·17		27·17	30·04	27·71	25·15	23·48	21·42
August	19·80	18·48	21·77		26·89	29·31	26·15	22·47	21·15	21·26
September	19·48	19·55	20·74		25·82	27·51	24·94	21·29	18·98	16·76
October	20·97	21·46	21·84		26·37	26·67	24·14	21·90	20·66	18·77
November	18·55	18·80	18·97	20·37	22·02	22·06	20·99	19·76	17·93	17·43
December	19·00	19·02	19·56	20·53	21·57	22·42	21·05	19·73	17·27	16·69
Mean	21·08	20·89	22·11		26·34	28·23	26·10	23·50	21·98	20·69

The above Table is intended chiefly as a key for comparing the tabular observations.

The mean at 18^h in January is rendered comparable with the means at the other hours thus: the daily means from January 9 to 14, being the means of 8 daily observations, were corrected by −0′·14, obtained, as for Table I., in order to reduce them to the mean of 9 daily observations, then

Mean Westerly Declination, January 9—31, ... = 25′·83
.... January 16—31, ... = 26·25
Difference, ... = 0·42

The mean for 18^h, deduced from the observations January 16—31, was therefore corrected by −0′·42, in order to reduce it to the mean from January 9—31 as for the other hours.

SECULAR CHANGE.

By comparing the means at 20^h, 23^h, 2^h, and 5^h, the observation hours in 1842 (Table I., p. 136, 1842), with the means at 20^h, $\frac{22^h+0^h}{2}$, 2^h and $\frac{4^h+6^h}{2}$ for 1843, we obtain the following results for the yearly retrogression of westerly declination:—

	20^h ′	23^h ′	2^h ′	5^h ′
1842,	26·61	29·80	33·80	30·40
1843,	20·89	24·22	28·23	24.80
Difference,	5·72	5·58	5·57	5·60

Mean, ... 5′·62.

TABLE IV.—Diurnal Variation of Westerly Declination for each Month in 1843.

Period.	18^{h}.	20^{h}.	22^{h}.	23^{h}.	0^{h}.	2^{h}.	4^{h}.	6^{h}.	8^{h}.	10^{h}.	Range.
	′	′	′	′	′	′	′	′	′	′	′
January	0·26	0·93	0·55		3·47	4·92	3·10	1·82	1·01	0·00	4·92
February	2·88	3·15	3·65		6·78	8·35	6·59	4·86	2·91	0·00	8·35
March	0·80	1·29	0·98		5·30	7·93	6·67	3·29	2·20	0·00	7·93
April	0·69	0·00	2·11		7·11	10·52	7·70	3·39	1·65	0·78	10·52
May	0·97	0·00	2·16		7·26	9·93	7·26	4·76	3·84	2·75	9·93
June	1·13	0·00	2·83		8·35	11·14	8·96	5·59	4·78	4·44	11·14
July	0·35	0·00	2·08		7·08	9·95	7·62	5·06	3·39	1·33	9·95
August	1·32	0·00	3·29		8·41	10·83	7·67	3·99	2·67	2·78	10·83
September	2·72	2·79	3·98		9·06	10·75	8·18	4·53	2·22	0·00	10·75
October	2·20	2·69	3·07		7·60	7·90	5·37	3·13	1·89	0·00	7·90
November	1·12	1·37	1·54	2·94	4·59	4·63	3·56	2·33	0·50	0·00	4·63
December	2·31	2·33	2·87	3·84	4·88	5·73	4·36	3·04	0·58	0·00	5·73
Spring	1·20	1·22	1·99		6·14	8·67	6·73	3·59	1·99	0·00	8·67
Summer	0·82	0·00	2·36		7·56	10·34	7·95	5·14	4·00	2·84	10·34
Autumn	1·15	0·90	2·52		7·43	8·90	6·14	2·95	1·33	0·00	8·90
Winter	1·23	1·54	1·65		4·31	5·09	3·67	2·40	0·70	0·00	5·09
The Year	0·39	0·20	1·42		5·64	7·54	5·41	2·80	1·29	0·00	7·54

Table IV. has been obtained from Table III. in subtracting the lowest mean in each month from all the other means. Spring in the above Table consists of the months of February, March, and April.

DIURNAL VARIATION OF DECLINATION.

The least westerly declination occurs in the first three and last four months of the year, at or after 9^{h} 10^{m} P.M. Makerstoun mean time; in the remaining five months at 7^{h} 10^{m} A.M. Mak. The greatest westerly declination occurs in each month at 1^{h} 10^{m} P.M., but in the winter months the maximum probably occurs before this time. The westerly declination increases with more rapidity to the maximum at 1^{h} 10^{m} P.M. than it diminishes after it, and in nine months the rapidity of diminution is less after 5^{h} 10^{m} P.M. than before it. In the winter months, the westerly declination does not begin to increase rapidly till 9^{h} 10^{m} A.M., whereas in summer, it does so at 7^{h} 10^{m} A.M. While this fact seems to shew some relation to *sunrise*, there is no corresponding one to *sunset*, but rather the reverse; for in winter the westerly declination diminishes with nearly equal rapidity from the maximum at 1^{h} 10^{m} P.M. till 9^{h} 10^{m} P.M., whereas in summer, on the whole, the rate of diminution seems to receive a check about 5^{h} 10^{m} P.M.

The minimum of westerly declination occurs in spring, autumn, and winter at or after 9^{h} 10^{m} P.M.; in spring and autumn a secondary minimum also occurs about 6^{h} 10^{m} A.M. In summer the principal minimum occurs at 7^{h} 10^{m} A.M. The principal maximum occurs about 0^{h} 40^{m} P.M. in winter, and about 1^{h} 10^{m} P.M. in summer.

In the mean for the year

The maximum of westerly declination occurs about 1^{h} 0^{m} P.M. Makerstoun mean time.
The minimum .... after 9 10 P.M. ....
A minimum .... about 7 0 A.M. ....

The exact periods of the principal minimum, and of the secondary maximum, cannot be determined from these observations; they are found, however, from the Term-day Observations in the years 1842 and 1843. The following Table contains the results of the summations of the observations at 0^{m} on 11 Term-days of 1842 (January Term-day being rejected), and on 11 Term-days of 1843 (June Term-day being rejected).

TABLE V.—Diurnal Variation of Westerly Declination deduced from the Observations at 0^m on 11 Term-days in 1842, and also on 11 Term-days in 1843.

Gött. M. T.	1842.	1843.	Mean.	Gött. M. T.	1842.	1843.	Mean.	Gött. M. T.	1842.	1843.	Mean.
H.	′	′	′	H.	′	′	′	H.	′	′	′
10	0·00	0·16	0·08	18	3·86	0·92	2·39	2	11·13	7·58	9·35
11	1·87	0·45	1·16	19	3·69	0·91	2·30	3	10·05	6·78	8·41
12	3·12	0·05	1·58	20	3·31	0·00	1·65	4	8·17	5·52	6·84
13	4·59	1·25	2·92	21	4·65	0·62	2·63	5	7·64	4·07	5·85
14	3·89	0·06	1·97	22	5·75	1·66	3·70	6	6·02	3·15	4·58
15	3·84	2·00	2·92	23	7·26	3·40	5·33	7	5·05	1·99	3·52
16	3·64	2·23	2·93	0	9·69	5·71	7·70	8	4·43	1·48	2·95
17	4·19	1·13	2·66	1	11·50	7·42	9·46	9	3·97	1·09	2·53

Both years give nearly the same result; the observations at 10^h and 11^h Gött. M. T. are affected by disturbances in 1842. The mean shews:—

The maximum of westerly declination, about 0^h 40^m P.M. Makerstoun mean time.
The minimum .... 10^h 10^m P.M. ....
A secondary maximum .... 2^h 10^m A.M. ....
A secondary minimum............................. 7^h 10^m A.M. ....

RANGES OF THE MONTHLY MEANS OF THE DIURNAL VARIATION.

The ranges given in the last column of Table IV. are probably very near the truth, for though the minimum takes place after 10^h Gött. M.T., the diminution after that time must be small. The range increases considerably from January to April, and diminishes as much from September to December, but there is little difference in the ranges of the six months from April to September. The range of the means for the summer quarter is twice as great as the range of the means for the winter quarter, the former being 10′34, and the latter 5′09.

TABLE VI.—Diurnal Range of Magnetic Declination for each Civil Day, as deduced from the Nine Daily Observations, with the Mean for each Week and for each Month in 1843.

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	′	′	′	′	′	′	′	′	′	′	′	′
1	[······]	3·19	3·60	11·05	10·54	15·41	17·36	11·00	14·29	[9·35]	9·22	11·80
2	4·84	4·05	5·29	[12·78]	······	14·88	[13·93]	11·95	21·77	6·91	8·17	9·37
3	7·27	3·47	4·50	15·84	6·83	17·63	15·03	12·62	[14·75]	12·79	12·74	[6·71]
4	2·56	3·54	9·77	12·18	12·23	[12·75]	8·97	19·10	13·28	9·00	5·65	4·06
5	2·38	[12·79]	[10·38]	19·49	9·75	7·75	7·84	7.16	11·89	21·48	[7·94]	5·25
6	3·60	49·03	15·14	33·38	25·50	8·80	7·63	[13·30]	13·29	9·77	9·29	6·43
7	3·94	9·70	21·85	13·78	[12·85]	12·05	8·17	9·46	9·64	7·06	4·65	5·38
8	[4·32]	6·93	5·72	14·37	7·87	7·73	10·56	13·47	11·02	[9·44]	7·17	16·91
9	6·06	8·77	5·35	[15·70]	9·18	9·04	[9·81]	18·02	16·44	8·07	5·87	14·54
10	5·31	7·86	5·10	7·97	12·55	16·20	14·32	10·01	[12·13]	3·55	3·26	[12·78]
11	4·66	5·81	12·07	13·36	6·62	[10·77]	10·25	12·96	13·17	6·71	5·42	17·39
12	4·41	[10·72]	[7·59]	11·33	12·68	8·64	7·92	15·51	8·75	8·61	[6·55]	13·09
13	5·02	22·54	9·42	10·22	6·36	13·72	12·35	[11·61]	13·74	9·63	9·50	9·37
14	4·39	11·18	7·26	11·29	[9·17]	9·31	9·55	13·03	10·34	10·98	7·78	6·26
15	[5·59]	8·18	6·34	13·43	13·27	9·39	11·70	10·98	9·01	[10·41]	7·50	3·09
16	9·42	15·25	8·67	[10·87]	8·85	9·25	[10·77]	7·19	8·07	14·97	6·02	2·97
17	4·87	4·57	7·82	11·36	7·23	9·43	10·26	10·56	[13·06]	6·91	4·64	[4·52]
18	5·45	5·69	21·56	8·38	9·87	[9·70]	10·87	8·27	21·83	11·39	4·00	5·13
19	6·51	[7·23]	[12·47]	10·55	9·32	7·00	9·91	11·77	15·92	8·84	[4·70]	3·98
20	4·85	4·78	14·19	10·22	8·17	11·70	8·98	[10·83]	13·18	7·97	3·09	5·67
21	5·81	6·59	7·80	10·38	[9·51]	11·45	10·00	10·28	17·99	4·27	6·67	12·33
22	[6·75]	6·48	14·80	5·30	7·31	······	11·61	14·27	12·86	[6·96]	3·79	3·19
23	9·25	6·19	8·69	[9·26]	9·35	······	[16·04]	9·85	11·03	5·92	5·45	3·36
24	6·86	23·44	8·29	9·82	13·05	13·98	32·85	8·77	[12·72]	8·74	4·87	[5·84]
25	7·22	12·30	8·61	10·05	15·02	[14·34]	17·92	10·76	9·89	6·00	2·82	4·61
26	6·32	[9·68]	[11·47]	9·80	16·33	16·49	14·88	11·83	15·57	25·14	[4·04]	5·29
27	4·98	3·81	8·36	12·13	13·57	13·79	12·95	[11·09]	8·98	6·06	2·68	6·27
28	11·85	8·74	19·12	12·02	[13·25]	13·12	11·84	10·17	11·04	5·18	4·10	8·18
29	[5·93]		25·78	11·74	15·17	8·76	14·86	12·87	9·30	[11·77]	4·31	8·49
30	5·85		9·22	[10·65]	9·16	25·60	[12·29]	12·12	7·07	9·60	3·38	5·99
31	3·40		8·92		10·27		11·14	13·99		15·43		[7·92]
Mean	5·66	10·09	10·12	12·38	11·00	12·13	12·30	11·78	12·67	9·65	5·85	7·63

MONTHLY MEANS OF THE DIURNAL RANGES.

The means of the diurnal ranges for January, November, and December, do not differ much from each other, but they differ considerably from the means for the remaining nine months, which differ little from each other. The means for the four seasons are:—

Winter; January, November, and December, mean of diurnal ranges, . = 6′·38
Spring; February, March, and April, ... =10·86
Summer; May, June, and July, ... =11·81
Autumn; August, September, and October,........................ . =11·37
The Year, ... =10·10

The quantities in Table VI. shew that the monthly means are much affected by irregular disturbing causes, and that if some of the larger diurnal ranges were removed, the monthly means would differ little from the ranges of the monthly means of the diurnal variations. It is obvious that the means of the diurnal ranges only differ from the diurnal ranges of the means in that the minimum or maximum of certain days does not occur at the same hour as the minimum or maximum of the monthly mean; as these departures from the mean are probably due to irregular disturbing causes, the following differences may be taken as some measure of these disturbances in the different months of the year:—

Monthly Means of Diurnal Ranges *minus* the Ranges of the Monthly Means of the Diurnal Variation:—

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0′·74	1′·74	2′·19	1′·86	1′·07	0′·99	2′·35	0′·95	1′·92	1′·75	1′·22	1′·90

The difference is a minimum in January, it increases to a maximum in March, diminishes to a minimum in June; and, if we except the sudden increase in July, it again becomes a maximum in September. The means of the differences for the four seasons are:—

		′
Winter;	January, November, December, mean	1·29
Spring;	February, March, April, ...	1·93
Summer;	May, June, July, ...	1·47
Autumn;	August, September, October, ...	1·54

From this we are perhaps entitled to conclude, *that a certain class of disturbances have their greatest effect at the equinoxes, and their least effect at the solstices.*

Those disturbances which increase the diurnal range of the mean are evidently not included in this result.

TABLE VII.—Means of the Diurnal Ranges of Magnetic Declination with reference to the Moon's Age and Declination for 1843.

Moon's Age.	Mean Range.	Moon's Age.	Mean Range.	After Moon farthest North.	Mean Range.	After Moon farthest North.	Mean Range.
Day.	′	Day.	′	Day.	′	Day.	′
15	9·79	0	9·92	0	9·63	14	10·99
16	10·17	1	8·55	1	13·01	15	8·67
17	10·95	2	8·25	2	12·96	16	8·71
18	9·03	3	12·15	3	12·71	17	9·20
19	9·70	4	9·60	4	13·61	18	8·44
20	9·23	5	10·28	5	11·11	19	9·30
21	9·57	6	12·31	6	10·37	20	9·98
22	8·95	7	15·52	7	8·90	21	9·37
23	9·22	8	11·40	8	8·35	22	9·91
24	9·25	9	8·45	9	9·03	23	10·12
25	11·15	10	10·74	10	9·42	24	13·21
26	10·57	11	9·80	11	9·64	25	10·98
27	11·89	12	11·16	12	9·35	26	9·70
28	11·21	13	9·97	13	10·92	27	9·88
29	10·56	14	9·23				

This Table has been formed from Table VI. in the manner already described, Table II.

VARIATIONS OF THE DIURNAL RANGES OF MAGNETIC DECLINATION WITH REFERENCE TO THE RELATIVE POSITIONS OF THE SUN, MOON, AND EARTH, AS INDICATED BY THE MOON'S AGE.

The partial means are very irregular, their general aspect when projected is that of a maximum near the time of new moon, and a minimum near the time of full moon ; in groups, the results are as follow :—

19 days to 26 days,	8 days including the	Third Quarter,	mean	9ʹ·70
27 ...... 3 ...	7	New Moon,	......	10·41
4 ...... 11 ...	8	First Quarter,	......	11·01
12 ...... 18 ...	7	Full Moon,	......	10·04

From these means the maximum would appear to occur in the First Quarter, and the minimum in the Third Quarter.

VARIATIONS OF THE DIURNAL RANGE OF THE MAGNETIC DECLINATION WITH REFERENCE TO THE MOON'S DECLINATION.

In the partial means there is an appearance of a secondary maximum at the moon's greatest south declination, but this disappears in the following means :—

4 days to 10 days,	including the moon's	passage of the Equator southwards, mean	10ʹ·11
11 17	....	greatest south declination, ...	9·64
18 24	....	passage of the Equator northwards, ...	10·05
25 3	....	greatest north declination, ...	11·27

Or, the diurnal range of the magnetic declination is a maximum when the moon has its greatest north declination, and it is a minimum at the time of the moon's greatest south declination.

HORIZONTAL COMPONENT OF MAGNETIC FORCE.

TABLE VIII.—Mean Values of the Variations of the Horizontal Component of Magnetic Force, the whole Horizontal Component being Unity, for each Civil Day, as deduced from the Nine Daily Observations, for each Week, and for each Month, in the Year 1843.

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00
1	[......]	1645	1808	1804	2068	2722	2288	2766	3093	[2982]	3572	3695
2	1353	1780	1952	[1540]	2033	3097	[2722]	2537	3200	2617	3851	3695
3	1531	1761	1973	1533	2418	2569	2765	3476	[2904]	2862	3204	[3911]
4	1589	2386	1991	1420	2455	[2791]	2508	3025	2590	3342	3919	4059
5	1649	[1928]	[1670]	1613	2323	2566	2499	2638	2449	2863	[3487]	3969
6	1766	2003	1736	0848	1807	2722	2443	[2745]	2949	2728	3600	3926
7	1955	1820	1114	1097	[1995]	3067	2814	2870	2638	2899	3294	4318
8	[1853]	1815	1255	1729	1037	2265	2360	2478	2759	[2923]	3056	3688
9	2148	1379	1636	[1320]	1664	2432	[2557]	1984	2752	2833	......	4670
10	1863	1718	1603	1185	2685	3352	2675	2679	[2794]	2977	......	[4122]
11	1741	1574	1708	1276	2197	[2622]	2630	2626	2771	3241	3201	4059
12	1695	[1570]	[1456]	1784	2087	2679	2425	2754	2958	3321	[3307]	3943
13	1809	1778	1079	1620	2225	2293	2775	[2644]	2886	3353	3408	4055
14	1695	1247	1220	1594	[2364]	2711	2667	2470	3342	3337	3340	4113
15	[1894]	1726	1493	1365	2900	2511	2944	2524	3289	[3291]	3343	4265
16	2358	1907	1029	[1693]	2270	2415	[2762]	2812	3398	3655	3410	4420
17	1951	1941	1254	1871	2504	2598	2701	2944	[3249]	2747	4005	[4326]
18	1855	1835	1667	1919	2519	[2735]	2652	2827	3613	3335	3816	4238

TABLE VIII.—*Continued.*

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00
19	1638	[1817]	[1509]	1790	2567	2903	2832	2617	2731	3678	[3972]	4566
20	1760	1716	1440	1850	2453	3189	2588	[2890]	3119	2885	4236	4355
21	1926	1739	1564	1838	[2653]	2797	3033	3008	2818	3505	4218	4473
22	[1703]	1764	2099	1748	3003	2929	2805	3086	3141	[3370]	4144	4564
23	1321	1906	1760	[1942]	2734	2552	[2836]	2856	3287	3482	3807	4589
24	1940	1467	1278	2060	2643	2857	3829	2874	[2961]	3218	4531	[4500]
25	1637	1577	1732	2057	2718	[2751]	2911	2712	2993	3451	4459	4672
26	1524	[1744]	[1655]	2099	2649	2823	1852	2400	2619	2866	[4213]	4472
27	2033	1856	1576	......	2692	2648	2343	[2854]	2908	3093	4478	4230
28	1434	1855	1825	......	[2830]	2693	2302	2935	2672	3458	3992	4092
29	[1635]		1760	2115	3380	3152	2731	3100	3093	[3232]	4013	4151
30	1609		1160	[2158]	2782	3120	[2547]	3106	3308	2875	4076	4122
31	1566		1708		2758		2604	3146		3526		[4292]
Mean	1744	1758	1571	1662	2428	2756	2653	2787	2976	3160	3790	4207

Table VIII. was formed in the following manner :—the means of the bifilar magnetometer scale readings, corrected for temperature, for each civil day, were first obtained, and these means were reduced to parts of the horizontal component by the following formulæ :—

Jan. 1—April 26. $f = (n - 530)\ 0·0001021 + 0·001000$
April 29—May 6. $f = (n - 488)\ 0·0000986 + 0·001000$
May 8—Nov. 8. $f = (n - 485)\ 0·0000986 + 0·001000$
Nov. 11—Dec. 31. $f = (n - 485)\ 0·0001064 + 0·001000 - 0·000008$

where f is the quantity in the previous Table, n the mean scale reading corrected for temperature.

The Bifilar magnetometer was twice adjusted in 1843 (see Introduction, No. 38). As the means for the three days immediately preceding the adjustment on April 27–28 were nearly equal to each other, and the means for the three days succeeding the adjustment were also nearly equal to each other, it was assumed that the mean force, n, for the three days succeeding the adjustment was equal to that, n', for the three days preceding it. 530 having been taken as a convenient zero for the means before the adjustments, z the zero for the means after the adjustment was obtained from the formula

$$(n - 530)\ 0·0001021 = (n' - z)\ 0·0000986$$

whence $z = 488$.

On May 6 the torsion circle was turned, and was not returned to its previous position, producing a difference of about three scale divisions, the zero after May 6 is therefore 485.

On the adjustment, Nov. 9–10, the same process was adopted as for that of April 27–28, which gave the zero nearly as before, 484·93; 0·001000 has been added to each mean in order to render them all positive.

The means of the four daily observations in the first week of January were corrected by $-0·000025$, and the means of the eight daily observations in the second week by $+0·000016$, corrections to the mean of nine observations obtained by comparisons of the observations in 1844.

The factors used for the above and following Tables in converting the scale divisions into parts of the whole horizontal component, are those given in the Postscript to the Introduction.

ANNUAL PERIOD OF THE HORIZONTAL COMPONENT OF MAGNETIC FORCE.

Differences of the monthly means deduced from the observations in 1844, at the nine hours of 18, 20, . . . 10, from those deduced from the 24 hourly observations made on each day, excepting Sundays, in that year.

24 observations *minus* 9 observations.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0·0000	−36	−61	−69	+24	−24	+13	+29	−34	+68	+46	−06	−28

These quantities being applied as corrections to the monthly means, foot of Table VIII., we obtain the following:—

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0·00	1708	1697	1502	1686	2404	2769	2682	2753	3044	3206	3784	4179

From these it appears that the horizontal component diminishes from January to March, increases from March to June, diminishes again slightly from June to between July and August, and then increases again till December; the whole range being 0·002677, and the increase of force from January to December being 0·002471. The annual period can only be rendered distinct when this secular change is eliminated. It has been found by a comparison of the monthly means of 1843 with those of 1842 and of 1844, that the mean annual change during the 12 months of 1843 is 0·002826. When proportional parts of this are subtracted from the means after January, we have—

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0·00	1708	1462	1031	0980	1462	1592	1269	1105	1160	1087	1429	1589

We have here a well marked *annual period*, consisting of *maxima near the solstices, and minima near the equinoxes*. The maximum is rather greater in the winter than in summer, but the difference is less than the effect of half a degree Fahrenheit on the bifilar magnet.

The range of the annual period is 0·000728, or about half the mean diurnal range for the year.

It may be desirable to examine the annual period for the year 1842 in a similar manner. If we reduce the monthly means of four observations, Table IX., Abstracts for 1841–2, to parts of force by the formula

$$f = (n - 530)\ 0{\cdot}0001021 + 0{\cdot}003000$$

where n is the mean in scale divisions in the Table referred to, we obtain the following values of f, which may be rendered comparable with the means, Table VIII., by subtracting 0·002000. The second line below contains the corrections for each month of the 4 observations to the 24 as deduced from the observations for 1844, and the third line contains the corrected means.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0·00	0960	0994	1188	0840	1646	1803	1743	1836	2016	2488	2772	3270
0·00	−0057	−0045	−0003	+0294	+0245	+0309	+0352	+0390	+0318	+0187	+0068	−0020
0·00	0903	0949	1185	1134	1891	2112	2095	2226	2334	2675	2840	3250

If the secular change be assumed the same for 1842 as for 1843, and if this be eliminated, we have—

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0·000	903	714	714	428	949	935	682	578	450	556	485	660

These means shew the same law as the means for 1843, with more irregularity, it is true, but this may be accounted for by the fewness of the observations, and the possible inaccuracy of the corrections.

TABLE IX.—Mean Variations of the Horizontal Component of Magnetic Force, after eliminating the Secular Change, with reference to the Moon's Age, Declination, and Distance from the Earth, for 1843.

Moon's Age.	Variations of Horizontal Component.	Moon's Age.	Variations of Horizontal Component.	After Moon farthest North.	Variations of Horizontal Component.	After Moon farthest North.	Variations of Horizontal Component.	Before and after Perigee.	Variations of Horizontal Component.	Before and after Apogee.	Variations of Horizontal Component.
Day.	0·000	Day.	0·000	Day.	0·000	Day.	0·000	Day.	0·000	Day.	0·000
15	000	0	288	0	263	14	224	7	328	7	145
16	199	1	213	1	211	15	182	6	256	6	061
17	117	2	322	2	292	16	103	5	249	5	232
18	245	3	260	3	246	17	119	4	000	4	173
19	169	4	288	4	013	18	204	3	091	3	225
20	246	5	311	5	000	19	234	2	239	2	191
21	299	6	242	6	034	20	274	1	192	1	242
22	300	7	115	7	126	21	138	P	197	A	144
23	196	8	178	8	243	22	228	1	242	1	320
24	328	9	083	9	188	23	191	2	251	2	256
25	251	10	038	10	089	24	182	3	219	3	253
26	313	11	090	11	329	25	224	4	263	4	238
27	350	12	125	12	223	26	151	5	311	5	250
28	359	13	043	13	247	27	223	6	338	6	364
29	229	14	173					7	222	7	342

Table IX. was formed from Table VIII. in the manner indicated for the magnetic declination, Table II.

VARIATIONS OF THE HORIZONTAL COMPONENT OF MAGNETIC FORCE, WITH REFERENCE TO THE RELATIVE POSITIONS OF THE SUN, MOON, AND EARTH, AS INDICATED BY THE MOON'S AGE.

The partial means in the first portion of Table IX. shew distinctly what is more distinctly evident in the following means, namely, the maximum about the period of new moon, and the minimum at the period of full moon :—

Means of Groups.

14 days to 16 days, Full Moon,	0·000124	29 days to 1 day, New Moon,	0·000243
17 ...... 20 ...	0·000194	2 ...... 5 ...	0·000295
21 ...... 24 ...	0·000278	6 ...... 9 ...	0·000154
25 ...... 28 ...	0·000318	10 ...... 13 ...	0·000074

It should be remarked that there is a secondary minimum shewn in these means at the time of new moon; this would not have been seen so distinctly, or at all, had larger groups been taken. As this minimum is also shewn, and nearly to the same extent in the mean for 1844,* it may be allowable to conclude, that *the principal minimum of the horizontal component occurs at the period of full moon; a secondary, and not very decided minimum, at the period of new moon; and maxima, nearly equal, immediately before and after the period of new moon.*

---

* Transactions of the Royal Society of Edinburgh, Vol. XVI., Plate IV.

VARIATIONS OF THE HORIZONTAL COMPONENT OF MAGNETIC FORCE, WITH REFERENCE TO THE MOON'S DECLINATION.

Means of Groups.

27 days to 1 day, Moon farthest North,	0·000232	13 days to 15 days, Moon farthest South,	0·000218
2 ...... 5 ...	0·000138	16 ...... 19 ...	0·000165
6 ...... 8 ...	0·000134	20 ...... 22 ...	0·000213
9 ...... 12 ...	0·000207	23 ...... 26 ...	0·000187

From these means we may conclude that *there are maxima when the moon has its greatest north and south declination, and minima when its declination is zero;* the principal minimum occurs when the moon is on the equator moving southwards.

VARIATIONS OF THE HORIZONTAL COMPONENT OF MAGNETIC FORCE, WITH REFERENCE TO THE MOON'S DISTANCE FROM THE EARTH.

Means of Groups.

6 days after Apogee to 6 days before Perigee,	0·000322	6 days after Perigee to 6 days before Apogee,	0·000191
5 days to 2 days before Perigee, . . .	0·000145	5 days to 2 days before Apogee, . . .	0·000205
1 day before to 1 day after Perigee, . .	0·000210	1 day before to 1 day after Apogee, . .	0·000235
2 days to 5 days after Perigee, . . .	0·000261	2 days to 5 days after Apogee, . . .	0·000240

TABLE X.—Means of the Bifilar Magnetometer Readings Corrected for Temperature, at the Observation Hours for each Month in 1843.

Month.	18^{h}.	20^{h}.	22^{h}.	23^{h}.	0^{h}.	2^{h}.	4^{h}.	6^{h}.	8^{h}.	10^{h}.
	Sc. Div.	Sc. Div.	Sc. Div	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.	Sc. Div.
January	538·10	537·95	533·71		534·11	538·80	540·62	538·19	537·11	537·41
February	535·84	539·04	533·72		534·93	538·23	540·14	537·43	538·34	537·39
March	534·90	534·22	528·48		528·07	535·96	540·36	540·54	538·30	537·34
April	534·53	533·37	524·37		525·56	536·19	543·66	548·25	542·26	536·90
May	496·79	492·82	486·56		489·30	501·94	506·84	512·85	512·56	501·77
June	500·47	495·70	488·00		491·42	502·11	508·64	512·19	515·87	510·96
July	497·55	495·32	486·07		488·08	499·48	512·98	515·88	513·74	506·85
August	498·64	494·37	487·41		491·91	505·11	512·13	514·71	512·69	511·20
September	505·50	500·25	491·77		496·61	505·57	512·57	509·50	510·72	509·48
October	508·03	504·51	495·66		497·44	508·25	512·18	512·64	512·31	511·17
November	510·60	509·00	503·19	501·43	503·77	512·41	515·16	516·06	513·70	509·29
	513·69	513·08	508·73	508·45	510·06	513·66	514·04	514·41	512·09	512·10
December	518·08	518·14	514·01	513·52	513·64	514·38	516·53	514·82	514·48	512·97

Table X. is intended chiefly as a key for comparing the tabular observations. The cross lines indicate breaks in the series from new adjustments, which will be found alluded to after Table VIII.

The mean at 18^h in January is rendered comparable with the means at the other hours thus; the daily means from January 9–14, being the means of 8 daily observations, were corrected by $+0{\cdot}15$ sc. div., obtained as for Table VIII., in order to reduce them to the mean of 9 daily observations, then,—

		Sc. Div.
Mean of Bifilar readings, January 9–31,	=	537·36
.... 16–31,	=	537·14
Difference,	=	0·22

The mean for 18^h deduced from the observations January 16–31, was therefore corrected by $+0{\cdot}22$, in order to reduce it to the mean from January 9 to 31, as for the other hours.

TABLE XI.—Diurnal Variations of the Horizontal Component of Magnetic Force in 1843, the whole Horizontal Component being Unity.

Periods.	18^h.	20^h.	22^h.	23^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.	Range.
Months.	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00
January	0448	0433	0000		0041	0519	0705	0457	0347	0378	0705
February	0217	0543	0000		0124	0461	0655	0379	0472	0375	0655
March	0697	0628	0042		0000	0806	1255	1273	1045	0946	1273
April	1037	0919	0000		0122	1207	1969	2438	1827	1279	2438
May	1009	0617	0000		0270	1516	1999	2591	2563	1499	2591
June	1229	0759	0000		0337	1391	2034	2384	2747	2263	2747
July	1131	0912	0000		0198	1322	2653	2938	2727	2048	2938
August	1107	0686	0000		0443	1745	2437	2691	2492	2345	2691
September	1353	0836	0000		0477	1360	2050	1747	1867	1746	2050
October	1220	0872	0000		0175	1241	1629	1674	1641	1529	1674
November	0587	0495	0000	−0071	0117	0637	0745	0799	0555	0430	0799
December	0543	0550	0110	0058	0071	0150	0379	0196	0160	0000	0550
Quarters.											
Spring	0636	0683	0000		0068	0811	1279	1349	1101	0853	1349
Summer	1123	0763	0000		0268	1410	2229	2638	2679	1937	2679
Autumn	1227	0798	0000		0365	1449	2039	2037	2000	1873	2039
Winter	0489	0456	0000		0040	0399	0573	0447	0317	0233	0573
Half-Years.											
Winter	0593	0562	0000		0063	0610	0869	0771	0678	0584	0869
Summer	1144	0788	0000		0308	1423	2190	2465	2370	1863	2465
The Year	0868	0674	0000		0185	1016	1529	1617	1524	1223	1617

SECULAR CHANGE OF THE HORIZONTAL COMPONENT OF MAGNETIC FORCE.

The mean change of the horizontal component from 1842 to 1843 has been determined in the following manner.

By the means for the year 1844, it has been found that the mean of the observations at 22^h and 0^h, is greater than the mean at 23^h by 0·000162, and that the mean of the observations at 4^h and 6^h is greater than the mean at 5^h by 0·000027, whence from the last line of Table XI.,—

Mean of 22^h and 0^h $= +0{\cdot}000092$, corrected to mean for 23^h $= -0{\cdot}000070$
Mean of 4^h and 6^h $= +0{\cdot}001573$, corrected to mean for 5^h $= +0{\cdot}001546$

The last line of Table XI. also gives the mean of the horizontal component for the year greater than the mean at 22^h by 0·000960, and, from Table VIII., the mean of the horizontal component for the year 1843 =0·002624, whence—

Mean at 20^h less than the mean for the year by 0·000286, or = 0·002338
Mean at 23^h .... 0·001030, or = 0·001594
Mean at 2^h greater .... 0·000056, or = 0·002680
Mean at 5^h .... 0·000586, or = 0·003210

From Table IX., Abstracts for the Observations of 1842, we obtain the following means in scale divisions :—

1842. $20^h = 514·56$, $23^h = 510·09$, $2^h = 521·82$, $5^h = 526·37$.

Converting these means into parts of force by the first formula given after Table VIII., we obtain the following results :—

	20^h.	23^h	2^h.	5^h.
1842.	−0·000576,	−0·001033,	+0·000165,	+0·000629
1843.	+0·002338,	+0·001594,	+0·002680,	+0·003210
Secular Change.	+0·002914,	+0·002627,	+0·002515,	+0·002581

Mean Secular Change, 1842 to 1843, = +0·002658

DIURNAL VARIATION OF THE HORIZONTAL COMPONENT OF MAGNETIC FORCE.

The means of the nine observations in Table XI. indicate two maxima and two minima in the months of January, February, November, and December; only one maximum and one minimum is visible in the means for the remaining months. The means for the four seasons are types of the months which compose them.

The principal minimum occurs in each month, and in the mean for the year about 9^h A.M.

The principal maximum occurs at 3^h 10^m P.M. in winter, about 4^h 10^m P.M. in spring and autumn, at 6^h 10^m P.M. in summer, and at 5^h 10^m P.M. in the mean for the year.

A secondary maximum occurs in winter about 6^h A.M.

The principal maximum in December occurs at 6^h 10^m A.M., in all the other months the principal maximum occurs in the afternoon.

In order to determine the periods of the secondary maximum and minimum, the observations made at 0^m on the Term-days of 1842 and 1843 have been made use of. The observations in 1842 were corrected by the temperature coefficient obtained by the method of deflections, those of which the means are given in the following Table were farther corrected by the coefficient − 0·46 Sc. div., the difference between the temperature coefficient obtained from deflections and that deduced from comparisons of the daily observations. The means in the following Table are then deduced from the observations at 0^m in 1842 thus corrected, and the observations at 0^m in 1843, as corrected in this volume. The winter solstice includes the months of November, December, January, and February, 1842 and 1843; the equinoxes, March, April, September, and October, 1842 and 1843; and the summer solstice, May, June, July, and August, 1842 and 1843.

TABLE XII.—Diurnal Variation of the Horizontal Component of Magnetic Force deduced from the Observations at 0^m on the Term-days of 1842 and 1843, the whole Horizontal Component being Unity.

Hour.	Winter Solstice.	Equinoxes.	Summer Solstice.	1842.	1843.	Mean.	Hour.	Winter Solstice.	Equinoxes.	Summer Solstice.	1842.	1843.	Mean.
	0·00	0·00	0·00	0·00	0·00	0·00		0·00	0·00	0·00	0·00	0·00	0·00
10	0505	2336	1547	1852	1045	1449	22	0169	0224	0005	0156	0080	0119
11	0430	1806	1729	1417	1198	1308	23	0042	0000	0000	0000	0000	0000
12	0349	1852	1814	1328	1320	1324	0	0000	0361	0337	0342	0095	0219
13	0614	0872	1649	1010	1051	1031	1	0250	0861	0686	0656	0514	0585
14	0445	1492	1425	1224	0989	1107	2	0531	1357	1420	1335	0842	1089
15	0614	1375	1174	1022	1058	1040	3	0731	1845	1520	1532	1170	1351
16	0558	0766	1242	0607	1075	0841	4	0755	1957	1881	1663	1370	1517
17	0486	1377	1190	0972	1035	1004	5	0757	1942	1996	1656	1446	1551
18	0741	1477	0784	0987	0986	0987	6	0724	1899	2197	1832	1352	1593
19	0818	1550	0482	0984	0887	0936	7	0522	1681	2466	1714	1370	1542
20	0655	1191	0324	0646	0772	0709	8	0636	1376	2224	1416	1380	1398
21	0517	0861	0234	0526	0520	0523	9	0556	1404	2140	1356	1349	1353

Besides the occurrence of some considerable disturbances, the number of observations seems too few to exhibit the secondary maximum and minimum well. The results for the principal maximum and minimum are the same as those deduced from Table XI. It may perhaps be added, as true for both, that the principal minimum occurs nearer noon in winter and summer than at the equinoxes.

The secondary minimum occurs near midnight in the mean for the months about the winter solstice; perhaps about the same time in the mean for the months about the equinoxes, but this part of the diurnal curve is very irregular from disturbances; the secondary minimum cannot be said to be at all visible in the mean for the months about the summer solstice, and it is very imperfectly shewn in the means for the year.

The secondary maximum occurs about 6 A.M. in the winter solstitial and equinoctial months, and perhaps earlier in the means for the year.

RANGES OF THE MONTHLY MEANS OF THE DIURNAL VARIATIONS OF THE HORIZONTAL COMPONENT OF MAGNETIC FORCE.

The quantities given in the last column of Table XI. are rather less than the true ranges, the minimum occurring near 23^h. The least diurnal range is that for December, and the greatest that for July. The range is nearly constant for the winter months, and also for the summer months, the most rapid increase occurring at the equinoxes; the following means will exhibit the rate of increase :—

	Jan. & Dec.		Feb. & Nov.		March & Oct.		April & Sept.		May & Aug.		June & July.
Ranges,	0·000627		0·000727		0·001473		0·002244		0·002641		0·002842
Differences,		0·000100		0·000746		0·000771		0·000397		0·000201	

The range of the monthly means is more than four times as great for the summer as for the winter months.

TABLE XIII.—Diurnal Ranges of the Horizontal Component of Magnetic Force for each Civil Day, as deduced from the 9 Daily Observations in 1843, with the Weekly and Monthly Means.

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0
1	[......]	0067	0046	0214	0231	0322	0385	0266	0328	[0220]	0194	0116
2	0067	0045	0109	[0389]	0249	0308	[0344]	0230	0375	0206	0192	0215
3	0127	0092	0091	0190	0213	0207	0378	0461	[0294]	0175	0237	[0124]
4	0089	0070	0113	0215	0198	[0271]	0395	0696	0278	0204	0169	0067
5	0111	[0104]	[0172]	1265	0302	0285	0251	0319	0278	0261	[0162]	0110
6	0173	0162	0174	0515	0939	0229	0224	[0425]	0281	0212	0097	0154
7	0029	0172	0346	0207	[0447]	0272	0289	0287	0217	0240	0155	0097
8	[0138]	0085	0199	0391	0476	0278	0412	0255	0265	[0226]	0124	0259
9	0227	0088	0189	[0331]	0288	0224	[0330]	0528	0405	0239	......	0242
10	0104	0092	0139	0197	0482	0302	0442	0427	[0252]	0182	......	[0199]
11	0187	0142	0169	0289	0275	[0295]	0281	0311	0213	0222	0102	0305
12	0079	[0132]	[0166]	0388	0256	0417	0337	0294	0231	0189	[0142]	0141
13	0062	0182	0242	0292	0170	0361	0330	[0289]	0182	0149	0213	0149
14	0120	0144	0124	0340	[0281]	0188	0290	0285	0144	0277	0153	0070
15	[0097]	0146	0136	0362	0366	0307	0231	0222	0132	[0274]	0103	0045
16	0099	0149	0219	[0317]	0333	0285	[0275]	0196	0152	0567	0114	0043
17	0140	0090	0182	0332	0287	0321	0259	0239	[0200]	0196	0109	[0058]
18	0078	0139	0335	0355	0274	[0303]	0281	0213	0183	0267	0119	0102
19	0098	[0117]	[0217]	0223	0202	0348	0256	0251	0370	0182	[0101]	0028
20	0083	0115	0143	0193	0280	0294	0212	[0282]	0220	0242	0099	0061

TABLE XIII.—*Continued.*

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0
21	0075	0101	0206	0166	[0251]	0263	0229	0206	0191	0130	0124	0089
22	[0089]	0110	0218	0144	0220	0187	0173	0346	0246	[0186]	0042	0039
23	0094	0083	0140	[0193]	0236	0297	[0561]	0439	0362	0165	0107	0066
24	0089	0210	0195	0165	0298	0227	0703	0371	[0245]	0183	0150	[0094]
25	0096	0164	0119	0235	0224	[0278]	1627	0341	0188	0211	0128	0104
26	0075	[0119]	[0161]	0257	0438	0340	0421	0241	0235	0202	[0107]	0074
27	0094	0092	0146	......	0357	0331	0278	[0297]	0249	0188	0064	0192
28	0160	0119	0151	......	[0312]	0285	0231	0213	0334	0209	0099	0187
29	[0100]		0215	0230	0339	0308	0372	0371	0261	[0214]	0096	0095
30	0115		0240	[0231]	0252	0349	[0277]	0246	0139	0163	0077	0128
31	0086		0206		0266		0285	0221		0330		[0135]
Mean	01061	01191	01774	03116	03130	02899	03683	03139	02484	02227	01278	01223

From the means at the foot of Table XIII. it will be seen that the least mean is that for January, and the greatest that for July; the same results may be deduced from these quantities as from the ranges of the monthly means, thus—

	Jan. & Dec.		Feb. & Nov.		March & Oct.		April & Sept.		May & Aug.		June & July.
Ranges,	0·001141		0·001234		0·002000		0·002802		0·003134		0·003291
Differences,		0·000093		0·000766		0·000802		0·000332		0·000155	

The mean of the diurnal ranges is about three times as great for the summer months as for the winter months.

If we take the differences of the monthly means of the diurnal ranges, and of the diurnal ranges of the monthly means, we shall have some measure of those irregularities which cause the two to differ.

From the means for each couple of months we have the following differences :—

Monthly means of the diurnal ranges, *minus* the diurnal ranges of the monthly means.

Jan. & Dec.	Feb. & Nov.	March & Oct.	April & Sept.	May & Aug.	June & July.
0·000514	0·000507	0·000527	0·000558	0·000493	0·000449

The difference is greater at the solstices than in the winter or summer, and is least in summer.

TABLE XIV.—Diurnal Ranges of the Horizontal Component of Magnetic Force, with reference to the Moon's Age and Declination for 1843.

Moon's Age.	Mean Diurnal Range.	Moon's Age.	Mean Diurnal Range.	After Moon farthest North.	Mean Diurnal Range.	After Moon farthest North.	Mean Diurnal Range.
Day.	0·00	Day.	0·00	Day.	0·00	Day.	0·00
15	2525	0	2217	0	2931	14	2375
16	2232	1	1792	1	2672	15	2022
17	2445	2	2015	2	3249	16	1960
18	2183	3	2198	3	3050	17	2026
19	2082	4	2237	4	2981	18	2166
20	1941	5	2037	5	2248	19	1858
21	2093	6	3207	6	2370	20	2168
22	1865	7	3227	7	2332	21	2146
23	2024	8	2756	8	2211	22	2057
24	1630	9	2337	9	2185	23	1925
25	1996	10	2303	10	1942	24	2124
26	2131	11	2405	11	2116	25	2088
27	2596	12	2430	12	2593	26	1962
28	3254	13	2422	13	2438	27	2437
29	2310	14	2321				

Table XIV. was formed from Table XIII. in the manner indicated for the declination Table II.

DIURNAL RANGES OF THE HORIZONTAL COMPONENT OF MAGNETIC FORCE, WITH REFERENCE TO THE RELATIVE POSITIONS OF THE SUN, MOON, AND EARTH, AS INDICATED BY THE MOON'S AGE.

The general aspect of the partial means, if we reject those for the 28th, 6th, and 7th days, which are much affected by disturbances, is that of a *minimum near the time of new moon, and a maximum near the time of full moon.*

Means of Groups.

14 days to 16 days, Full Moon,	0·002359	29 days to 1 day, New Moon,	0·002106
17 ...... 20 ...	0·002163	2 ...... 5 ...	0·002122
21 ...... 24 ...	0·001903	6 ...... 9 ...	0·002882
25 ...... 28 ...	0·002494	10 ...... 13 ...	0·002390

DIURNAL RANGES OF THE HORIZONTAL COMPONENT OF MAGNETIC FORCE, WITH REFERENCE TO THE MOON'S DECLINATION.

Means of Groups.

27 days to 1 day, Moon farthest North,	0·002680	13 days to 15 days, Moon farthest South,	0·002278
2 ...... 5 ...	0·002882	16 ...... 19 ...	0·002002
6 ...... 8 ...	0·002304	20 ...... 22 ...	0·002124
9 ...... 12 ...	0·002209	23 ...... 26 ...	0·002025

These and the partial means indicate *maxima about the periods of greatest north and south declinations, and minima when the declination is zero*; the maximum at the period of greatest south declination is not well marked.

VERTICAL COMPONENT OF MAGNETIC FORCE.

TABLE XV.—Mean Values of the Variations of the Vertical Component of Magnetic Force (the whole Vertical Component being Unity), for each Civil Day as deduced from the Nine Daily Observations, for each Week, and for each Month in the year 1843.

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01
1	[......]	6830	6621	6034	5974	5952	5837	5696	......	[5251]	5475	5330
2	7042	6896	6635	[6159]	5971	5905	[5953]	5688	......	5134	5431	5370
3	6997	6853	6606	6032	5939	5937	5879	5633	[......]	5203	5471	[5260]
4	7078	6772	6538	6077	5951	[5919]	6013	5895	......	5182	5282	5089
5	7020	[6834]	6686]	6680	5996	5904	5902	5713	......	5037	[5345]	5198
6	6988	6869	6553	6282	5702	5886	5886	[5620]	5358	4980	5227	5291
7	6933	6821	7120	6224	[5965]	5931	6005	5574	5475	4931	5283	5152
8	[6991]	6792	6664	6310	6102	5935	5982	5549	5552	[5160]	5378	5300
9	6881	6809	6715	[6258]	5969	6024	[5964]	5351	5519	5341	5367	5146
10	6984	6820	6606	6113	6073	5989	5988	5683	[5494]	5327	5412	[5223]
11	7140	6652	6513	6218	6034	[6042]	5934	5748	5552	5341	5345	5180
12	7012	[6744]	[6569]	6400	6107	6114	5992	5673	5462	5334	[5386]	5294
13	6997	6696	6587	6152	6054	6133	5862	[5737]	5404	5519	......	5265
14	7041	6737	6507	6101	[6063]	6058	5823	5789	5538	5548	5314	5223
15	[6988]	6746	6484	6247	6034	6034	5825	5800	5321	[5536]	5488	5183
16	6927	6758	6452	[6160]	6089	6033	[5828]	5732	5408	5554	5430	5195
17	6983	6747	6502	6097	6062	6196	5856	5717	[5385]	5750	5340	[5181]
18	6969	6667	6524	6197	5962	[6027]	5829	5869	5262	5511	5351	5183
19	6890	[6701]	[6421]	6172	6013	6072	5775	5967	5344	5199	[5304]	5137

TABLE XV.—*Continued.*

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01	0·01
20	6980	6689	6371	6171	6025	5945	5849	[6049]	5437	5417	5254	5169
21	6972	6671	6314	6173	[5959]	5973	5713	6117	5242	5415	5258	5173
22	[6853]	6677	6358	6144	5927	5883	5819	6244	5325	[5356]	5188	5169
23	6700	6690	6294	[6070]	5905	5953	[5925]	......	5391	5300	5279	5147
24	6712	6981	6330	5971	5920	5999	5742	......	[5385]	5344	5292	[5163]
25	6870	6658	6275	5956	5917	[5981]	6619	5921	5461	5460	5337	5087
26	6878	[6718]	[6252]	6005	5778	6008	5805	5866	5502	5649	[5287]	5159
27	6787	6705	6235	6037	5930	6014	5670	[5805]	5389	5596	5243	5247
28	7000	6651	6164	6049	[5888]	6030	5683	5748	5396	5469	5301	5314
29	[6860]		6216	5990	5900	6050	5773	5686	5449	[5557]	5269	5184
30	6833		6105	[5993]	5868	6035	[5701]	5609	5141	5626	5282	5207
31	6833		6025		5932		5702	5652		5532		[5206]
Means.	6940	6758	6457	6153	5968	5997	5875	5757	5405	5373	5332	5207

Table XV. was formed in the following manner; the means of the balance micrometer readings, corrected for temperature, were first obtained for each civil day, and these means were reduced to parts of the vertical component by the following formulæ:—

January 1—August 22. $f = n \times 0{\cdot}000009$
August 25—August 31. $f = (n - 160)\ 0{\cdot}000009$
September 6—November 11. $f = (n - 222)\ 0{\cdot}000009$
November 14—December 31. $f = (n - 260)\ 0{\cdot}000009$

Where f is the quantity in the previous Table and n the mean micrometer reading corrected for temperature.

The balance needle was removed three times in 1843 for the purpose of determining its temperature correction, namely, on August 23 and 24, on September 1, 2, 3, 4, and 5, and on November 13. These removals necessarily broke the series of observations, but it is conceived that the different portions after August have been reduced to nearly the values which they would have had, had there been no removal, by the following methods:—

1*st*, To connect the observations after November 13, with those immediately before it,—

Mean of the micrometer readings, week, Oct. 16— 21. = 830·3
.... Oct. 23— 28. = 829·8

$$\left.\begin{array}{l}\text{........................ Oct. 30—Nov. 4.} = 829{\cdot}7\\ \text{........................ Nov. 6— 11.} = 814{\cdot}8\end{array}\right\}\text{Change in 14 days} = \left\{\begin{array}{l}-\ 0{\cdot}6\\ -\ 15{\cdot}0\end{array}\right.$$

.... period, Oct. 16—Nov. 11. = 826·1, before adjustment.

The mean corresponding to October 30 is, therefore, 826·1, and the mean change for 14 days being − 7·8, the mean corresponding to November 13 will be 818·3.

Mean of micrometer readings, week, Nov. 14— 18. = 858·3
.... Nov. 20— 25. = 845·3

$$\left.\begin{array}{l}\text{........................ Nov. 27—Dec. 2.} = 848{\cdot}8\\ \text{........................ Dec. 4— 9.} = 837{\cdot}3\end{array}\right\}\text{Change in 14 days} = \left\{\begin{array}{l}-\ 9{\cdot}5\\ -\ 8{\cdot}0\end{array}\right.$$

.... period, Nov. 14—Dec. 9. = 847·4, after adjustment.

The mean corresponding to November 27 is, therefore, 847·4, and the mean change for 14 days being − 8·7, the mean corresponding to November 13 will be 856·1. This gives nearly 38·0 micrometer divisions more than the previous result; 38·0 was therefore subtracted from all the daily means in micrometer divisions after November 13, 1843.

It will be obvious from a consideration of the above weekly means, that this correction cannot be far from the truth; indeed, the mean of the micrometer readings for November 10 and 11 is 819·6, and for November 14 and 15 is 860·1, which, supposing the change for two days small, will give nearly the same difference.

2*d*, To connect the observations after September 6, with those before August 22.

This has been a matter of greater difficulty than in the previous case, both on account of the greater interval elapsed, and also on account of considerable changes occurring in the daily means before August 23; for this reason, the weekly changes could not be compared with any confidence, and the following method was adopted:—

Mean of balance magnetometer readings corrected, January 1842—August 1842,	= 920·3
.... January 1843—August 1843,	= 693·0
Annual change corresponding to the beginning of May 1842–43, . . .	= 227·3
Mean of the balance magnetometer readings corrected, September 1843—April 1844,	= 783·0
.... September 1844—April 1845,	= 585·0
Annual change corresponding to the beginning of January 1844–1845, . .	= 198·0
Hence, mean annual change corresponding to the beginning of March 1843–1844,	= 213·0
Mean of balance magnetometer readings corrected September 1842–August 1843, corresponding to the beginning of March 1843, ...	= 736·0
Therefore the mean in the beginning of March 1844 *should be*	= 523·0
But the mean, September 1843 to August 1844, corresponding to the mean in the beginning of March 1844, *was*	= 745·0
Whence the micrometer readings after September 1843 are more than those before September 1843, by	222·0

After the corrections in the first case had been made, all the means after September 5, 1843 were corrected by −222·0 micrometer divisions, which, it is believed, is not far from the truth. The correction for the six daily means, August 25–31, was obtained by interpolating between the means of the preceding and succeeding weeks for the mean of the six days, the correction applied was −160 micrometer divisions.

As it has been found from the observations in 1844, that, in the month of January, the mean of the 4 daily observations corresponding to those made in the first week of January 1843, and of the 8 corresponding to those made in the second week, differ little from the mean of the whole 24, no correction has been applied to the means of the 4 or 8 daily observations.

ANNUAL PERIOD OF THE VERTICAL COMPONENT OF THE MAGNETIC FORCE.

Differences of the monthly means deduced from the observations in 1844, at the hours 18, 20, . . . 10, from those deduced from the 24 hourly observations made on each day (excepting Sundays) in that year:—

24 observations *minus* 9 observations.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
−0·0000 | 16	16	82	70	59	12	22	66	66	74	55	14

These quantities being applied as corrections to the monthly means at the foot of Table XV., we obtain the following:—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0·01 | 6924	6742	6375	6083	5909	5984	5853	5691	5339	5299	5277	5193

From these it appears that the vertical component diminishes considerably from January till May, increases from May till June, diminishes slowly from June till August, more rapidly till September, and slowly from September till December. The diminution from January till December is 0·001731; if we refer to the previous attempt to connect the different series of observations, we find the mean annual diminution from the beginning of March 1843 till the beginning of March 1844 =213 micrometer divisions; this, together with the *rate* of this change, will give 210 micrometer divisions (=0·001890) for the diminution from January 1843 to January 1844. If proportional parts of this be applied to the monthly means above, the secular change will be eliminated, and the annual period rendered more distinct. The corrected means are as follow:—

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0·01	6924	6899	6690	6555	6539	6771	6798	6793	6599	6716	6852	6925

This indicates a maximum at mid-winter and at mid-summer, a minimum about April and a minimum in September. It seems, therefore, very probable that the same law holds for the vertical component as has already been shewn to exist for the horizontal component, namely, *maxima at the solstices, and minima at the equinoxes.*

From the above the minima at the equinoxes seem to differ little, but the maximum at the winter solstice is considerably greater than that at the summer solstice.

The range of the annual period is 0·000386.

TABLE XVI.—Mean Variations of the Vertical Component of Magnetic Force, after eliminating the Secular Change, with reference to the Moon's Age, Declination, and Distance from the Earth, for 1843.

Moon's Age.	Variations of Vertical Component.	Moon's Age.	Variations of Vertical Component.	After Moon farthest North.	Variations of Vertical Component.	After Moon farthest North.	Variations of Vertical Component.	Before and after Perigee.	Variations of Vertical Component.	Before and after Apogee.	Variations of Vertical Component.
Day.	0·000	Day.	0·000	Day.	0·000	Day.	0·000	Day.	0·000	Day.	0·000
15	055	0	025	0	136	14	077	7	118	7	078
16	056	1	017	1	094	15	063	6	108	6	054
17	081	2	050	2	151	16	046	5	191	5	067
18	057	3	076	3	096	17	013	4	101	4	067
19	048	4	035	4	091	18	035	3	071	3	041
20	077	5	024	5	060	19	013	2	078	2	043
21	076	6	147	6	062	20	020	1	107	1	053
22	058	7	045	7	069	21	016	P	073	A	055
23	076	8	068	8	067	22	012	1	071	1	000
24	057	9	057	9	047	23	030	2	105	2	046
25	090	10	049	10	040	24	000	3	105	3	064
26	071	11	062	11	031	25	062	4	091	4	114
27	028	12	000	12	055	26	045	5	090	5	114
28	144	13	009	13	090	27	090	6	046	6	129
29	051	14	011					7	064	7	110

Table XVI. was formed from Table XV. in the manner already indicated, Table II. for the declination.

VARIATIONS OF THE VERTICAL COMPONENT OF MAGNETIC FORCE WITH REFERENCE TO THE RELATIVE POSITIONS OF THE SUN, MOON, AND EARTH, AS INDICATED BY THE MOON'S AGE.

The means shew, with considerable irregularities, *maxima near the quadratures, and minima near the syzigies.* The principal minimum occurs at the period of full moon, the following means of groups give the same result:—

14 days to 16 days, Full Moon,	0·000041	29 days to 1 day, New Moon,	0·000031
17 ...... 20 ...	0·000066	2 ...... 5 ...	0·000046
21 ...... 24 ...	0·000067	6 ...... 9 ...	0·000079
25 ...... 28 ...	0·000083	10 ...... 13 ...	0·00003[illegible]

VARIATIONS OF THE VERTICAL COMPONENT OF MAGNETIC FORCE, WITH REFERENCE TO THE MOON'S DECLINATION.

The second portion of Table XVI., in groups, gives the following means :—

27 days to 1 day, Moon farthest North,	0·000107	13 days to 15 days, Moon farthest South,	0·000077
2 ...... 5 ...	0·000099	16 ...... 19 ...	0·000027
6 ...... 8 ...	0·000066	20 ...... 22 ...	0·000016
9 ...... 12 ...	0·000043	23 ...... 26 ...	0·000034

These means indicate a well marked minimum at the passage of the equator northwards ; a well marked maximum at the period of greatest north declination ; a diminution of the component from thence till after the passage of the equator southwards ; and a secondary maximum at the greatest south declination. Though the latter is not well shewn in these groups, the means on the whole shew, *maxima of the vertical component at the periods of greatest north and south declination, and minima when the declination is zero.*

VARIATIONS OF THE VERTICAL COMPONENT OF MAGNETIC FORCE, WITH REFERENCE TO THE MOON'S DISTANCE FROM THE EARTH.

Means of Groups.

6 days after Apogee to 6 days before Perigee,	0·000116	6 days after Perigee to 6 days before Apogee,	0·000060
5 days to 2 days before Perigee, . .	0·000110	5 days to 2 days before Apogee, . .	0·000054
1 day before to 1 day after Perigee, .	0·000084	1 day before to 1 day after Apogee, .	0·000036
2 days to 5 days after Perigee, . .	0·000098	2 days to 5 days after Apogee, . .	0·000084

TABLE XVII.—Means of the Balance Magnetometer Readings corrected for Temperature at the Observation Hours for each Month in 1843.

Month.	18^h.	20^h.	22^h.	23^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.
	Mic. Div.	Mic. Div.	Mic. Div.	Mic. Div.	Mic. Div.	Mic. Div.	Mic. Div.	Mic. Div.	Mic. Div.	Mic. Div.
January	756·0	762·6	765·7		768·3	769·2	767·7	774·4	777·0	774·7
February	740·0	745·5	746·6		744·2	745·5	753·2	761·9	763·9	757·2
March	707·5	713·8	715·9		708·6	707·1	715·8	730·0	735·5	722·0
April	662·2	668·9	676·9		669·7	670·4	688·3	721·6	709·2	685·9
May	659·8	667·0	664·5		650·5	649·4	665·2	674·7	679·6	657·4
June	662·2	671·4	668·6		655·6	651·4	664·6	677·3	675·8	669·4
July	638·9	647·6	651·3		643·7	648·6	659·4	664·5	667·8	653·7
August	628·2	638·5	641·7		624·8	634·5	643·6	656·4	653·3	638·8
	793·1	803·4	803·1		790·2	790·5	799·7	807·6	806·0	793·4
September	805·9	823·5	829·0		817·8	824·4	831·5	836·0	824·7	810·9
October	801·1	812·0	821·1		819·4	821·5	830·9	829·9	821·3	814·0
November	804·2	808·4	817·8	819·3	821·2	827·0	829·5	821·3	818·9	816·9
	841·1	843·1	845·4	840·7	841·3	849·3	856·9	856·0	859·3	855·9
December	824·2	826·1	830·2	829·6	833·4	839·9	848·1	849·1	853·4	842·9

Table XVII. is intended chiefly as a key for comparing the tabular observations. The cross lines in the Table indicate that a break has occurred in the series ; the means so separated are not comparable with each other. The periods at which the needle was removed have been already mentioned.—See remarks to Table XV.

The mean at 18^{h} in January is rendered comparable with the means at the other hours, thus:—

Mic. Div.
Mean of balance magnetometer readings, January 9—31. = 768·8
.... January 16—31. = 764·5
Difference, ... = 4·3

The mean for 18^{h} deduced from the observations January 16 to 31 was therefore corrected by + 4·3 micrometer divisions, in order to reduce it to the mean from January 9 to 31, as for the other hours.

TABLE XVIII.—Diurnal Variations of the Vertical Component of Magnetic Force in 1843, the whole Vertical Component being Unity.

Periods.	18^{h}.	20^{h}.	22^{h}.	23^{h}.	0^{h}.	2^{h}.	4^{h}.	6^{h}.	8^{h}.	10^{h}.	Range.
	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00
January	0000	0059	0087		0111	0119	0105	0166	0189	0168	0189
February	0000	0049	0059		0038	0049	0119	0197	0215	0155	0215
March	0004	0060	0079		0013	0000	0078	0206	0256	0134	0256
April	0000	0060	0132		0067	0074	0235	0535	0423	0213	0535
May	0094	0158	0136		0010	0000	0142	0228	0272	0072	0272
June	0097	0180	0155		0038	0000	0119	0233	0220	0162	0233
July	0000	0078	0112		0043	0087	0184	0230	0260	0133	0260
August	0030	0122	0133		0000	0067	0149	0254	0230	0103	0254
September	0000	0158	0208		0107	0166	0230	0271	0169	0045	0271
October	0000	0098	0180		0165	0184	0268	0259	0182	0116	0268
November	0000	0026	0073	0052	0063	0127	0176	0142	0151	0126	0176
December	0000	0017	0054	0049	0083	0141	0215	0224	0263	0168	0263
Spring	0000	0055	0089		0038	0040	0143	0312	0297	0166	0312
Summer	0035	0110	0105		0001	0000	0119	0201	0222	0093	0222
Autumn	0000	0116	0167		0081	0129	0206	0251	0184	0078	0251
Winter	0000	0034	0071		0086	0129	0165	0177	0201	0154	0201
Winter Solstice	0000	0038	0068		0074	0109	0154	0182	0204	0154	0204
Equinoxes	0000	0093	0149		0087	0105	0202	0317	0257	0126	0317
Summer Solstice	0032	0111	0113		0000	0015	0125	0213	0222	0095	0222
The Year	0000	0070	0100		0043	0066	0149	0227	0217	0114	0227

DIURNAL VARIATION OF THE VERTICAL COMPONENT OF MAGNETIC FORCE.

An examination of the monthly means will shew, that they may be arranged into three very distinct groups, namely, the months January, February, November, and December, about the winter solstice; the months March, April, September, and October, about the equinoxes; and the months May, June, July, and August, about the summer solstice. A consideration of the monthly means, however, will shew, that the diurnal curves pass gradually from the type of the one group to that of the next following.

In the means of the months about the winter solstice there is but one maximum and one minimum distinctly shewn; the *diurnal curve is single.*

The minimum occurs *before* 5^{h} 10^{m} A.M., Makerstoun mean time.
The maximum occurs between 6^{h} and 7^{h} P.M., ...

There is a slight inflexion in the curve about 11 A.M., tending to a minimum; this minimum is more or less shewn in the separate monthly means, but never very distinctly excepting in February.

In the mean of the months, about the equinoxes, there are two maxima and two minima shewn; *the diurnal curve is double:*—

The minimum occurs between 9^{h} P.M. and 5^{h} A.M., Makerstoun mean time.
The maximum occurs at 5^{h} 10^{m} P.M., ...
A secondary maximum occurs about 9^{h} 10^{m} A.M., ...
A secondary minimum .... 11^{h} 40^{m} A.M., ...

Each of the four months gives nearly the same result. In the means of the months about the summer solstice, there are two maxima and two minima, *the diurnal curve is also double*:—

The minimum (as far as it can be deduced from the 9 observations), occurs at Noon, Makerstoun mean time.
The maximum occurs about 6ʰ 10ᵐ P.M., ……………………
A minimum occurs between 9ʰ P.M. and 5ʰ A.M., ……………………
A secondary maximum occurs about 8ʰ A.M., ……………………

Whether the principal maximum occurs near noon or near midnight cannot be determined from the observations, but an examination of the monthly means will shew that the noon minimum becomes more marked from January till June, and then becomes less so till December.

The result for the whole year is exactly that for the equinoctial months.

As the above results agree on the whole with those for the year 1844,* it may be permissable to conclude, that,—

1st, The diurnal curve is single in winter, unequally double at the equinoxes, and nearly equally double at midsummer.

2d, The minimum near noon occurs at the same hour in the equinoctial and summer months; the morning maximum occurs nearer noon in the equinoctial than in the summer months; the principal or evening maximum occurs nearly at the same hour in the winter and summer months, and farther from noon than in the equinoctial months.

In order to determine the period of the principal minimum, the observations made at 0ᵐ on the term-days of 1842 and 1843 have been used. The observations in 1842 were corrected by various temperature coefficients, depending on the method of deflections, the means in the following table were obtained after farther corrections had been applied for the differences of the first coefficients from that obtained by comparisons of the daily observations. The means in the following table are deduced from the term observations at 0ᵐ in 1842 thus corrected, and, from the term observations in 1843, as corrected in this volume. The winter solstice includes the months of November, December, January, and February, 1842 and 1843; the equinoxes, the months of March, April, September, and October, 1842 and 1843; and the summer solstice, the months of May, June, July, and August, 1842 and 1843.

TABLE XIX.—Diurnal Variations of the Vertical Component of Magnetic Force, deduced from the Observations at 0ᵐ on the Term-Days of 1842 and 1843, the whole Vertical Component being Unity.

Hour.	Winter Solstice.	Equinoxes.	Summer Solstice.	1842.	1843.	Mean.	Hour.	Winter Solstice.	Equinoxes.	Summer Solstice.	1842.	1843.	Mean.
	0·00	0·00	0·00	0·00	0·00	0·00		0·00	0·00	0·00	0·00	0·00	0·00
10	0250	0572	0299	0492	0281	0357	22	0141	0589	0351	0510	0238	0344
11	0190	0532	0256	0410	0267	0309	23	0151	0590	0298	0478	0240	0329
12	0080	0420	0153	0292	0170	0201	0	0184	0552	0241	0460	0218	0309
13	0000	0083	0029	0000	0101	0021	1	0220	0517	0233	0478	0194	0306
14	0051	0000	0000	0008	0052	0000	2	0229	0510	0288	0500	0211	0326
15	0078	0064	0036	0144	0000	0042	3	0225	0556	0359	0547	0238	0363
16	0077	0099	0073	0186	0007	0067	4	0251	0671	0382	0622	0274	0418
17	0063	0178	0189	0264	0049	0126	5	0248	0729	0401	0632	0313	0443
18	0058	0312	0262	0345	0103	0194	6	0228	0783	0425	0638	0345	0462
19	0083	0420	0341	0447	0142	0265	7	0227	0788	0441	0661	0336	0469
20	0095	0530	0336	0483	0184	0303	8	0197	0707	0473	0632	0313	0443
21	0129	0587	0347	0492	0242	0337	9	0194	0604	0448	0563	0293	0399

In the mean for all the periods, the principal minimum occurs at midnight, or 1ʰ A.M. In the mean for both years, the principal minimum occurs at 1ʰ A.M. The principal minimum perhaps occurs nearer noon in winter than in summer, as there is an indication of a minimum about 5^h A.M. The following are the results from the mean of both years :—

---

* Transactions of the Royal Society of Edinburgh, Vol. XVI., p. 137.

The principal minimum at 1^h 10^m A.M., Makerstoun mean time.
The principal maximum at 6^h P.M., ………………….
A secondary maximum at 9^h 10^m A.M., ………………….
A secondary minimum at 11^h 40^m A.M., ………………….

The same results may be deduced from these means as have been already deduced from the means Table XVIII.

SECULAR CHANGE OF THE VERTICAL COMPONENT OF MAGNETIC FORCE.

The means for the year 1844 shew that the means of the observations at 22^h and 0^h, and at 4^h and 6^h, are respectively very nearly the same as the means of the observations at 23^h and 5^h. Assuming that they are equal for the year 1843, we shall have from the means for the year at the foot of Table XVIII. = 0·000100 and from the mean for the year deduced from the means at the the foot of Table XV. = 0·015935.

Mean at 20^h less than the mean of 9 observations from Table XVIII. by 0·000040, or = 0·015895
Mean for 23^h ……………………………………………………………… 0·000039, or = 0·015896
Mean at 2^h ………………………………………………………………… 0·000044, or = 0·015891
Mean for 5^h greater ………………………………………………………… 0·000078, or = 0·016013

From Table XVII., Abstracts for the observations of 1842, we have the means in micrometer divisions at the corresponding hours in 1842, these being converted into parts of force by the first formula given in the remarks to Table XV. we have,

1842 ; 20^h = 0·017902, 23^h = 0·017962, 2^h = 0·017980, 5^h = 0·018147.

The means above for 1843 being subtracted from these, we have—

Secular change, 20^h = −0·002007, 23^h = −0·002066, 2^h = −0·002089, 5^h = −0·002134.
Mean secular change 1842 to 1843, = −0·002074.

RANGES OF THE MONTHLY MEANS OF THE DIURNAL VARIATIONS.

The ranges given in the last column of Table XVIII. must be very imperfect for some months, since the minimum actually occurs in general a little after midnight. It is very obvious, however, that the range is greatest at the equinoxes, and that it differs little in summer from winter, thus the diurnal range of the mean for the winter group of months is 0·000204, for the summer group 0·000222, while for the group at the equinoxes it is 0·000317. The corresponding groups in Table XIX. give the following ranges :—

Diurnal range ; winter group = 0·000251 ; summer group = 0·000492 ; equinoctial group = 0·000788 ;
or nearly in the ratios of 1, 2, and 3.

TABLE XX.—Diurnal Ranges of the Vertical Component of Magnetic Force, as deduced from the 9 Daily Observations in 1843, with the Weekly and Monthly Means.

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00
1	[……]	0227	0130	0226	0168	0292	0492	0211	…..	[0481]	0442	0400
2	0959	0099	0111	[0865]	0258	0414	[0363]	0297	……	0421	0213	0468
3	0356	0159	0135	0371	0314	0597	0406	0366	[……]	0501	0681	[0270]
4	0056	0162	0474	0332	0338	0405]	0185	1536	……	0282	0312	0184
5	0096	[0283]	[0810]	3738	0200	0469	0238	0288	……	1011	[0327]	0286
6	0251	0802	0434	0373	2713	0264	0274	[0798]	0262	0396	0217	0166
7	0267	0355	3300	1416	[0894]	0398	0300	0266	0436	0228	0303	0247
8	[0360]	0123	0407	1330	0512	0421	0945	0807	0459	[0341]	0232	1177
9	0610	0280	0322	[0838]	1010	0139	[0361]	1526	0542	0139	0373	0555
10	0259	0165	0191	0363	0590	0254	0378	0353	[0459]	0133	0246	[0633]
11	0676	0276	0163	0434	0185	[0387]	0140	0399	0418	0141	0105	0822
12	0133	[0351]	[0347]	1112	0145	0499	0129	0143	0446	0210	[0264]	0552

TABLE XX.—*Continued.*

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·00
13	0172	0440	0634	0738	0403	0691	0461	[0283]	0451	0402	……	0445
14	0127	0724	0446	0835	[0417]	0318	0523	0407	0324	0430	0380	0100
15	[0149]	0224	0327	0473	0882	0210	0206	0256	0324	[0387]	0213	0184
16	0127	0340	0234	[0573]	0584	0642	[0307]	0142	0309	0412	0356	0083
17	0211	0297	0445	0299	0303	0211	0281	0244	[0377]	0553	0139	[0201]
18	0129	0411	0709	0835	0400	[0302]	0229	0318	0252	0316	0301	0337
19	0298	[0287]	[0389]	0259	0322	0265	0233	0275	0769	0590	[0236]	0152
20	0059	0364	0218	0277	0285	0365	0157	[0344]	0284	0790	0114	0347
21	0119	0110	0207	0287	[0328]	0212	0292	0175	0468	0210	0289	0205
22	[0185]	0199	0517	0145	0304	0240	0305	0706	0896	[0383]	0218	0118
23	0157	0139	0383	[0239]	0366	0354	[0706]	……	0562	0231	0256	0115
24	0175	1483	0197	0382	0294	0290	0823	……	[0497]	0280	0380	[0210]
25	0302	0440	0166	0169	0497	[0298]	2258	0463	0408	0200	0261	0155
26	0107	[0407]	[0291]	0178	0885	0395	0399	0356	0419	1010	[0274]	0103
27	0159	0102	0122	0381	0274	0269	0643	[0316]	0226	0679	0094	0563
28	1331	0148	0103	0210	[0511]	0238	0190	0191	0861	0130	0447	0395
29	[0400]		0773	0246	0539	0235	0438	0260	0407	[0491]	0207	0101
30	0441		0325	[0263]	0531	0618	[0390]	0309	0414	0472	0115	0290
31	0131		0197		0339		0558	0344		0217		[0295]
Mean	0297	0337	0432	0616	0506	0357	0442	0426	0452	0400	0275	0328

TABLE XXI.—Diurnal Ranges of the Vertical Component of Magnetic Force, with reference to the Moon's Age and Declination for 1843.

Moon's Age.	Mean Diurnal Range.	Moon's Age.	Mean Diurnal Range.	After Moon farthest North.	Mean Diurnal Range.	After Moon farthest North.	Mean Diurnal Range.
Day.	0·000	Day.	0·000	Day.	0·000	Day.	0·000
15	411	0	362	0	603	14	528
16	346	1	261	1	383	15	362
17	461	2	255	2	567	16	351
18	338	3	434	3	463	17	421
19	361	4	392	4	724	18	273
20	306	5	343	5	397	19	331
21	325	6	877	6	448	20	308
22	311	7	624	7	437	21	327
23	229	8	540	8	371	22	307
24	275	9	403	9	342	23	325
25	408	10	472	10	270	24	397
26	368	11	411	11	298	25	514
27	424	12	444	12	475	26	301
28	607	13	493	13	469	27	461
29	387	14	385				

This Table has been formed from Table XX., in the manner indicated for the declination, Table VII.

DIURNAL RANGES OF THE VERTICAL COMPONENT OF MAGNETIC FORCE, WITH REFERENCE TO THE MOON'S AGE.

The general aspect of the partial means is exactly similar to that of the means for the horizontal component, Table XIV., and, with similar exceptions, namely, of the means for the 28th, 6th, and 7th days, the result is the same, or *a minimum about the time of new moon, and a maximum about the time of full moon.*

Means of Groups.

14 days to 16 days, Full Moon,	0·000381	29 days to 1 day, New Moon,	0·000337
17 ...... 20 ...	0·000366	2 ...... 5 ...	0·000356
21 ...... 24 ...	0·000285	6 ...... 9 ...	0·000611
25 ...... 28 ...	0·000452	10 ...... 13 ...	0·000455

DIURNAL VARIATIONS OF THE VERTICAL COMPONENT OF MAGNETIC FORCE, WITH REFERENCE TO THE MOON'S DECLINATION.

Means of Groups.

27 days to 1 day, Moon farthest North,	0·000482	13 days to 15 days, Moon farthest South,	0·000453
2 ...... 5 ...	0·000537	16 ...... 19 ...	0·000344
6 ...... 8 ...	0·000419	20 ...... 22 ...	0·000314
9 ...... 12 ...	0·000346	23 ...... 26 ...	0·000384

These means shew the same result as that already obtained for the horizontal component (Table XIV.), namely, *maxima about the periods of greatest north and south declination, and minima near the periods when the declination is zero*; the maximum at the period of greatest south declination is better marked than for the horizontal component; the principal minimum occurs when the moon is moving northwards.

MAGNETIC DIP.

The following results are deduced from the variations of the horizontal and vertical components by means of the formula

$$\Delta\ \theta = \frac{\frac{1}{2}\sin 2\ \theta}{0\cdot0002909}\left(\frac{\Delta\ Y}{Y} - \frac{\Delta\ X}{X}\right)$$

where $\frac{\Delta\ Y}{Y}$ is the quantity in the tables for the vertical component, $\frac{\Delta\ X}{X}$ the quantity in those for the horizontal component, θ, the magnetic dip assumed to be 71° 18′, $\Delta\ \theta$ the variations of dip given in the following tables, and 0·0002909 the value of 1′ in parts of radius.

SECULAR CHANGE OF MAGNETIC DIP.

From the mean secular changes for the two components of magnetic force, pages 235 and 245, we obtain

Mean Secular Change of Magnetic Dip 1842 to 1843 = – 4′·92.

ANNUAL PERIOD OF MAGNETIC DIP.

From the quantities, pages 231 and 241, exhibiting the annual periods of the two components of magnetic force (the secular changes being eliminated), the following quantities have been obtained, which shew the variations of the magnetic dip for the different months of the year :—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0′·145	0′·374	0′·605	0′·518	0′·000	0′·106	0′·470	0′·636	0′·377	0′·578	0′·360	0′·269

These quantities indicate *maxima of magnetic dip about the periods of the equinoxes, and minima about the periods of the solstices.*

TABLE XXII.—Diurnal Variations of Magnetic Dip, deduced from Tables XI. and XVIII.

Period.	18^h.	20^h.	22^h.	23^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.	Range.
	′	′	′	′	′	′	′	′	′	′	′
January	0·158	0·235	0·714		0·697	0·208	0·000	0·321	0·460	0·406	0·714
February	0·331	0·043	0·618		0·468	0·129	0·000	0·368	0·290	0·328	0·618
March	0·503	0·633	1·262		1·238	0·386	0·000	0·114	0·403	0·380	1·262
April	0·900	1·086	2·116		1·922	0·801	0·176	0·000	0·519	0·870	2·116
May	1·505	1·980	2·598		2·187	0·880	0·526	0·000	0·074	0·973	2·598
June	1·451	2·026	2·789		2·317	1·181	0·636	0·391	0·000	0·443	2·789
July	1·640	1·949	2·932		2·655	1·532	0·248	0·000	0·250	0·824	2·932
August	1·414	1·947	2·683		2·073	0·789	0·154	0·000	0·182	0·202	2·683
September	0·486	1·188	2·109		1·508	0·651	0·000	0·358	0·127	0·124	2·109
October	0·248	0·712	1·704		1·507	0·418	0·102	0·045	0·000	0·048	1·704
November	0·073	0·195	0·759	0·811	0·627	0·153	0·091	0·000	0·263	0·367	0·759
December	0·000	0·011	0·507	0·556	0·577	0·556	0·394	0·594	0·672	0·740	0·740
Spring	0·520	0·528	1·274		1·150	0·379	0·000	0·103	0·345	0·467	1·274
Summer	1·424	1·876	2·664		2·277	1·089	0·361	0·021	0·000	0·637	2·664
Autumn	0·630	1·197	2·080		1·611	0·534	0·000	0·049	0·018	0·040	2·080
Winter	0·000	0·070	0·583		0·557	0·228	0·085	0·228	0·388	0·427	0·583
Winter Solstice	0·019	0·000	0·528		0·471	0·140	0·000	0·200	0·300	0·339	0·528
Equinoxes	0·465	0·835	1·728		1·474	0·494	0·000	0·060	0·193	0·286	1·728
Summer Solstice	1·405	1·878	2·653		2·210	0·998	0·293	0·000	0·029	0·513	2·653
The Year	0·543	0·818	1·550		1·298	0·457	0·011	0·000	0·087	0·293	1·550

DIURNAL VARIATIONS OF MAGNETIC DIP.

Spring in the foregoing table consists of the months of February, March, and April. The means for the quarters may be taken as types of the months from which they are obtained.

In winter the diurnal curve is double; it is probably double also in spring; these means only shew portions of a single curve in summer and autumn.

In the mean for the year,—

The maximum of dip occurs about $9^h\ 30^m$ A.M., Makerstoun mean time.
The minimum .... $5^h\ 0^m$ P.M., ...

In the mean for winter,—

The maximum occurs about $10^h\ 10^m$ A.M., Makerstoun mean time.
The minimum occurs before 5^h A.M., ...
A secondary minimum occurs about $3^h\ 10^m$ P.M., ...
A secondary maximum occurs after 9^h P.M., ...

Nearly the same periods occur for spring, the minimum at $3^h\ 10^m$ P.M. being the principal minimum; the minimum occurs as late as 6^h P.M. in summer.

In order, if possible, to obtain the periods of maxima or minima not shewn in the 9 daily observations, the following table has been formed.

TABLE XXIII.—Diurnal Variation of Magnetic Dip, deduced from Tables XII. and XIX.

Gött. M. T.	Winter Solstice.	Equinoxes.	Summer Solstice.	1842 and 1843.	Gött. M. T.	Winter Solstice.	Equinoxes.	Summer Solstice.	1842 and 1843.
H.	′	′	′		H.	′	′	′	′
10	0·499	0·000	0·808	0·040	22	0·735	2·213	2·466	1·410
11	0·514	0·509	0·574	0·137	23	0·877	2·448	2·416	1·518
12	0·484	0·345	0·379	0·008	0	0·955	2·033	2·006	1·270
13	0·125	1·013	0·421	0·126	1	0·733	1·476	1·635	0·886
14	0·354	0·282	0·624	0·025	2	0·450	0·953	0·929	0·383
15	0·207	0·468	0·922	0·138	3	0·238	0·493	0·899	0·148
16	0·264	1·136	0·890	0·371	4	0·240	0·496	0·547	0·033
17	0·324	0·587	1·065	0·263	5	0·235	0·573	0·447	0·024
18	0·054	0·623	1·563	0·351	6	0·248	0·673	0·263	0·000
19	0·000	0·659	1·959	0·478	7	0·457	0·905	0·000	0·060
20	0·182	1·147	2·118	0·754	8	0·307	1·138	0·282	0·183
21	0·360	1·549	2·224	0·982	9	0·389	0·992	0·346	0·184

In winter the principal minimum occurs at 6^{h} A.M., the secondary maximum about 10^{h} P.M. The means are too irregular in the other periods to give the times of the secondary maximum and minimum; in other respects they agree with those in Table XXII.

RANGES OF THE MONTHLY MEANS OF THE DIURNAL VARIATIONS OF MAGNETIC DIP.

The annual variation of the diurnal ranges seems to bear a similar relation to the sun's declination, as the annual variation of atmospheric temperature does to it; this will be seen distinctly if we place under the ranges of the diurnal variation of magnetic dip the ranges computed on the assumption that one degree of the sun's altitude is equivalent to a diurnal range of 0′·05 of dip.

Range.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
True	0′·71	0′·62	1′·26	2′·12	2′·60	2′·79	2′·93	2′·68	2′·11	1′·70	0′·76	0′·74
Computed	0′·69	1′·09	1′·63	2′·21	2′·66	2′·87	2′·78	2′·40	1′·86	1′·28	0′·80	0′·57

Thus, in the first half of the year, the true range is less than the computed, but in the second it is greater. If this similarity to the *mean* monthly increase of temperature should be found to hold for succeeding years, it is probable that no other connection will be found to exist; a glance at the mean temperatures for each month in 1843, in the succeeding abstracts, will shew that there is no distinct relation between range and temperature for that year; there will, however, be evidence of some cause of retardation of the solar influence which produces the diurnal motion of the needle.

The diurnal variation of dip is about 0′·7 in winter, and four times as great in summer; the mean of all the monthly ranges is 1′·75, the diurnal range of the mean for the year being 1′·55.

TABLE XXIV.—Variations of Magnetic Dip, with reference to the Moon's Age, Declination, and Distance from the Earth, as deduced from Tables IX. and XVI.

Moon's Age.	Variations of Magnetic Dip.	Moon's Age.	Variations of Magnetic Dip.	After Moon farthest North.	Variations of Magnetic Dip.	After Moon farthest North.	Variations of Magnetic Dip.	Before and after Perigee.	Variations of Magnetic Dip.	Before and after Apogee.	Variations of Magnetic Dip.
Days.	′	Days.	′	Days.	′	Days.	′	Days.	′	Days.	′
15	0·393	0	0·061	0	0·178	14	0·157	7	0·115	7	0·263
16	0·187	1	0·131	1	0·189	15	0·187	6	0·179	6	0·326
17	0·298	2	0·052	2	0·164	16	0·251	5	0·273	5	0·161
18	0·140	3	0·144	3	0·154	17	0·200	4	0·438	4	0·223
19	0·210	4	0·072	4	0·392	18	0·134	3	0·312	3	0·142
20	0·159	5	0·036	5	0·374	19	0·080	2	0·166	2	0·179
21	0·103	6	0·237	6	0·340	20	0·046	1	0·245	1	0·136
22	0·083	7	0·263	7	0·251	21	0·184	P	0·204	A	0·240
23	0·211	8	0·221	8	0·127	22	0·085	1	0·155	1	0·000
24	0·053	9	0·309	9	0·164	23	0·143	2	0·181	2	0·115
25	0·168	10	0·347	10	0·260	24	0·121	3	0·214	3	0·136
26	0·083	11	0·307	11	0·000	25	0·142	4	0·154	4	0·204
27	0·000	12	0·205	12	0·136	26	0·200	5	0·103	5	0·192
28	0·111	13	0·300	13	0·147	27	0·172	6	0·029	6	0·089
29	0·150	14	0·167					7	0·167	7	0·092

VARIATIONS OF MAGNETIC DIP, WITH REFERENCE TO THE MOON'S AGE.

A glance at the quantities in the first portion of Table XXIV. will at once shew that the *dip is a maximum when the sun and moon are in opposition, and that it is a minimum when they are in conjunction.* This result is perhaps more distinct in the following

Means of Groups.

14 days to 16 days, Full Moon,	0′·249	29 days to 1 day, New Moon,	0′·114
17 …… 20 …	0′·202	2 …… 5 …	0′·076
21 …… 24 …	0′·112	6 …… 9 …	0′·257
25 …… 28 …	0′·090	10 ……13 …	0′·290

The maximum of dip occurs in these means rather before full moon, and there is an indication of a secondary maximum at the time of new moon, the minima occurring immediately before and after; this indication of a secondary maximum is probably too indistinct to be trusted.

VARIATIONS OF MAGNETIC DIP, WITH REFERENCE TO THE MOON'S DECLINATION.

Means of Groups.

27 days to 1 day, Moon farthest North,	0′·180	13 days to 15 days, Moon farthest South,	0′·164
2 …… 5 …	0′·271	16 …… 19 …	0′·166
6 …… 8 …	0′·239	20 …… 22 …	0′·105
9 ……12 …	0′·140	23 …… 26 …	0′·151

The result from these means does not seem very distinct; on the whole, there seems to be a maximum of dip about the time the moon is on the equator moving southwards, and a minimum about the time it is on the equator moving northwards.

VARIATIONS OF MAGNETIC DIP, WITH REFERENCE TO THE MOON'S DISTANCE FROM THE EARTH.

Means of Groups.

6 days after Apogee to 6 days before Perigee,	0′·119	6 days after Perigee to 6 days before Apogee,	0′·197
5 days to 2 days before Perigee, . .	0′·297	5 days to 2 days before Apogee, . .	0′·176
1 day before to 1 day after Perigee, .	0′·201	1 day before to 1 day after Apogee, .	0′·125
2 days to 5 days after Perigee, . .	0′·163	2 days to 5 days after Apogee, . .	0′·162

TOTAL MAGNETIC FORCE.

The following results are deduced from the variations of the horizontal and vertical components by means of the formula

$$\frac{\Delta R}{R} = \frac{\Delta Y}{Y} - \cos^2\theta \left(\frac{\Delta Y}{Y} - \frac{\Delta X}{X}\right)$$

where $\frac{\Delta R}{R}$ is the quantity in the following tables, $\frac{\Delta Y}{Y}$ and $\frac{\Delta X}{X}$ the quantities in the tables for the vertical and horizontal components respectively, and θ the magnetic dip $= 71° 18$.

SECULAR CHANGE OF THE TOTAL MAGNETIC FORCE.

From the mean secular changes for the two components of magnetic force, pages 235 and 245, we obtain

Mean Secular Change of the Total Force, 1842 to 1843, = 0·001587.

ANNUAL PERIOD OF THE TOTAL MAGNETIC FORCE.

From the quantities, pages 231 and 241, exhibiting the annual periods of the two components of magnetic force (the secular change being eliminated), the following quantities have been obtained, which shew the variations of the total magnetic force for the different months of the year.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0·000	406	358	127	000	036	257	248	227	058	156	313	395

These quantities indicate *maxima of the total force about the periods of the solstices, and minima about the periods of the equinoxes.* One minimum occurs after the vernal euqinox, and the maximum at the winter solstice is greater than that at the summer solstice.

TABLE XXV.—Diurnal Variations of the Total Force of the Earth's Magnetism, deduced from Tables XI. and XVIII.

Period.	18^{h}.	20^{h}.	22^{h}.	23^{h}.	0^{h}.	2^{h}.	4^{h}.	6^{h}.	8^{h}.	10^{h}.	Range.
	0·000	0·000	0·000	0·000	0·000	0·000	·000	0·000	0·000	0·000	0·000
January	000	052	032		058	114	121	150	159	144	159
February	000	078	031		025	069	152	194	219	156	219
March	063	107	063		000	071	187	304	325	206	325
April	034	076	045		000	117	340	658	494	250	658
May	151	168	085		000	119	296	434	471	182	471
June	144	171	070		000	074	247	385	411	309	411
July	057	105	041		000	155	379	450	455	271	455
August	095	136	082		000	194	339	459	417	288	459
September	000	089	048		006	150	278	284	205	081	284

TABLE XXV.—*Continued.*

Period.	18^h.	20^h.	22^h.	23^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.	Range.
	0.000	0·000	0·000	0·000	0·000	0·000	0·000	0·000	0·000	0·000	0·000
October	000	052	035		040	167	282	279	206	136	282
November	000	014	005	−011	009	120	175	150	133	097	175
December	000	016	004	−006	026	086	176	165	196	095	196
Spring	024	079	039		000	078	219	378	339	196	378
Summer	118	148	065		000	116	307	423	446	254	446
Autumn	016	076	040		000	155	285	325	261	153	325
Winter	000	027	014		031	107	157	155	163	112	163
Winter Solstice	000	040	018		029	097	156	165	177	123	177
Equinoxes	013	069	036		000	115	260	370	296	157	370
Summer Solstice	112	145	069		000	135	315	432	438	262	438
The Year	032	075	031		000	106	234	313	294	171	313

DIURNAL VARIATION OF THE TOTAL MAGNETIC FORCE.

Spring, in the foregoing table, consists of the months of February, March, and April. The diurnal curve is double in each month of the year. In the mean for the year,—

The principal maximum occurs about 6^h P.M., Makerstoun mean time.
A minimum occurs about 11^h 10^m A.M., ...
A secondary maximum occurs about 7^h 10^m A.M., ...
A minimum occurs between 9^h P.M. and 5^h A.M., ...

These observations do not shew the period of this minimum, nor whether it is secondary or principal. The principal maximum occurs as late as 7^h P.M. in winter and in summer, and as early as 4^h and 5^h P.M. in some of the months about the equinoxes. The secondary maximum occurs at the same hour, 7^h 10^m A.M., throughout the year. In the winter months, the principal minimum occurs between 9^h 10^m P.M., and 5^h 10^m A.M. The minimum near noon occurs about 9^h 40^m A.M. in mid-winter, and about 11^h 10^m A.M. in mid-summer. The following table has been formed in order to obtain, if possible, the period of the earliest minimum.

TABLE XXVI.—Diurnal Variations of the Total Force of the Earth's Magnetism, deduced from Tables XII. and XIX.

Gött. M. T.	Winter Solstice.	Equinoxes.	Summer Solstice.	Mean.	Gött. M. T.	Winter Solstice.	Equinoxes.	Summer Solstice.	Mean.
H.	0·000	0·000	0·000	0·000	H.	0·000	0·000	0·000	0·000
10	213	600	281	355	22	081	397	168	206
11	152	509	260	298	23	077	375	120	181
12	045	413	177	202	0	102	378	104	186
13	000	010	049	011	1	160	398	133	221
14	029	000	000	000	2	197	443	257	290
15	071	045	006	031	3	214	535	331	351
16	064	014	046	032	4	240	649	389	417
17	044	148	145	103	5	237	698	418	442
18	062	278	169	161	6	216	744	460	464
19	096	382	209	220	7	195	726	503	465
20	090	444	188	231	8	180	622	506	427
21	106	461	188	242	9	168	533	475	383

From this table, the principal minimum occurs about $1^{h}\ 10^{m}$ A.M. in the mean for the year, about midnight in winter, and about 2^{h} A.M. at the equinoxes and in summer.

The results from Table XXVI. differ little from those deduced from Table XXV. The secondary maximum occurs earlier in summer than at the other periods, namely, about 6^{h} A.M. in summer, and about 8^{h} A.M. in winter and at the solstices. The following are the periods for the year:—

The principal maximum occurs at 6^{h} P.M., Makerstoun mean time.
The principal minimum occurs at $1^{h}\ 10^{m}$ A.M., ...
A secondary maximum occurs at 8^{h} A.M., ...
A secondary minimum occurs at $10^{h}\ 40^{m}$ A.M., ...

RANGES OF THE MONTHLY MEANS OF THE DIURNAL VARIATIONS OF THE TOTAL MAGNETIC FORCE.

It is evident, from the previous results, that the quantities in the last column of Table XXV. are not at all the diurnal ranges, as the minimum occurs near midnight. From Table XXVI., however, it appears that the range of the mean diurnal curve for the months about the winter solstice is 0·000240, about the equinoxes is 0·000744, and about the summer solstice is 0·000506; or, that the ranges are nearly in the following ratio:—

Winter Solstice : Summer Solstice : Equinoxes = 1 : 2 : 3.

TABLE XXVII.—Variations of the Total Force of the Earth's Magnetism with reference to the Moon's Age, Declination, and Distance from the Earth, as deduced from Tables IX. and XVI.

Moon's Age.	Variations of Magnetic Force.	Moon's Age.	Variations of Magnetic Force.	After Moon farthest North.	Variations of Magnetic Force.	After Moon farthest North.	Variations of Magnetic Force.	Before and After Perigee.	Variations of Magnetic Force.	Before and After Apogee.	Variations of Magnetic Force.
Days.	0·000	Days.	0·000	Days.	0·000	Days.	0·000	Days.	0·000	Days.	0·000
15	037	0	040	0	130	14	073	7	107	7	052
16	058	1	025	1	087	15	057	6	086	6	022
17	073	2	066	2	146	16	033	5	164	5	051
18	064	3	083	3	092	17	005	4	058	4	045
19	048	4	049	4	064	18	033	3	040	3	027
20	082	5	042	5	035	19	017	2	062	2	025
21	087	6	145	6	041	20	027	1	083	1	040
22	071	7	040	7	056	21	009	P	053	A	031
23	076	8	067	8	066	22	015	1	056	1	000
24	073	9	048	9	042	23	028	2	087	2	035
25	095	10	036	10	026	24	000	3	084	3	051
26	084	11	053	11	043	25	060	4	076	4	094
27	049	12	001	12	053	26	037	5	080	5	095
28	154	13	000	13	087	27	085	6	043	6	120
29	058	14	016					7	047	7	101

VARIATIONS OF THE TOTAL MAGNETIC FORCE WITH REFERENCE TO THE MOON'S AGE.

Means of Groups.

14 days to 16 days, Full Moon,	0·000037	29 days to 1 day, New Moon,	0·000041
17 ...... 20 ...	0·000067	2 ...... 5 ...	0·000060
21 ...... 24 ...	0·000077	6 ...... 9 ...	0·000075
25 ...... 28 ...	0·000095	10 ...... 13 ...	0·000022

From these means *the total force is a minimum when the sun and moon are in opposition and in conjunction, and a maximum about the quadratures.* The principal minimum occurs at the time of full moon.

VARIATIONS OF THE TOTAL MAGNETIC FORCE WITH REFERENCE TO THE MOON'S DECLINATION.

Means of Groups.

27 days to 1 day, Moon farthest North,	0·000101	13 days to 15 days, Moon farthest South,	0·000072
2 ...... 5 ...	0·000084	16 ...... 19 ...	0·000022
6 ...... 8 ...	0·000058	20 ...... 22 ...	0·000017
9 ...... 12 ...	0·000041	23 ...... 26 ...	0·000031

There seem, therefore, to be *maxima of the total magnetic force when the moon has its greatest north and south declinations, and minima about the time when the moon is on the equator.* The principal maximum occurs when the moon has its greatest north declination, and the principal minimum when it is on the equator moving northwards; the secondary maximum and minimum are not shewn so distinctly.

VARIATIONS OF THE TOTAL MAGNETIC FORCE WITH REFERENCE TO THE MOON'S DISTANCE FROM THE EARTH.

Means of Groups.

6 days after Apogee to 6 days before Perigee,	0·000103	6 days after Perigee to 6 days after Apogee,	0·000041
5 days to 2 days before Perigee, ...	0·000081	5 days to 2 days before Apogee, ...	0·000037
1 day before to 1 day after Perigee,.........	0·000064	1 day before to 1 day after Apogee, ...	0·000024
2 days to 5 days after Perigee, ...	0·000082	2 days to 5 days after Apogee, ...	0·000069

EXTREME POSITIONS.

TABLE XXVIII.—Differences of the Extreme Readings of the Three Magnetometers from the Monthly Means for the Hours at which they occurred, for each Month in 1843, as deduced from the Nine Daily Observations, together with the Ranges of the Three Magnetic Elements in each Month.

Month.	Westerly Declination.						Bifilar Magnetometer.						Balance Magnetometer.						Ranges.		
	Greater than Mean.			Less than Mean.			Reading greater than Mean.			Reading less than Mean.			Reading greater than Mean.			Reading less than Mean.			Declination.	Horizontal component	Vertical component
1843.	d.	h.	′	d.	h.	′	d.	h.	Sc. Div.	d.	h.	Sc. Div.	d.	h.	Mic. Div.	d.	h.	Mic. Div.	′		
Jan.	16	2	+ 4·15	23	8	− 4·64	16	6	+ 9·4	28	8	− 12·9	28	6	+ 85·0	27	18	− 44·5	12·70	0·00239	0·00133
Feb.	24	4	+ 15·95	6	10	− 36·75	12	20	+ 10·0	14	10	− 14·5	24	8	+ 123·9	13	20	− 47·8	59·29	·00267	·00171
Mar.	7	4	+ 10·94	29	10	− 15·41	18	6	+ 19·4	7	8	− 24·8	7	8	+ 292·7	31	0	− 52·2	33·02	·00474	·00335
Apr.	6	2	+ 10·79	6	10	− 12·85	5	6	+ 43·9	5	10	− 68·8	5	6	+ 344·0	5	20	− 105·4	33·38	·01265	·00452
May	26	2	+ 4·22	6	10	− 18·44	10	6	+ 18·4	6	10	− 79·1	15	10	+ 79·8	6	10	− 257·2	29·84	·01069	·00303
June	30	2	+ 7·96	29	20	− 6·50	30	6	+ 13·3	11	22	− 10·6	13	6	+ 53·7	4	18	− 38·6	25·60	·00474	·00097
July	25	2	+ 5·55	24	10	− 26·31	25	4	+ 96·2	24	22	− 42·0	25	4	+ 246·1	0	18	− 56·7	40·48	·01627	·00291
Aug.	22	2	+ 4·23	4	6	− 8·79	4	6	+ 22·6	8	18	− 36·8	4	6	+ 116·1	8	18	− 153·0	19·86	·00744	·00268
Sept.	1	20	+ 13·00	18	10	− 9·11	23	6	+ 17·4	18	22	− 16·4	5	6	+ 51·5	27	18	− 46·2	24·90	·00508	·00115
Oct.	5	0	+ 6·16	26	10	− 17·63	16	10	+ 38·1	4	22	− 9·0	26	6	+ 90·8	4	18	− 63·8	31·39	·00617	·00165
Nov.	6	0	+ 5·89	3	8	− 4·22	24	2	+ 10·8	3	0	− 10·3	3	2	+ 32·6	2	18	− 20·3	14·20	·00335	·00068
Dec.	12	2	+ 5·45	11	8	− 11·22	8	20	+ 15·1	8	10	− 18·6	8	8	+ 94·5	10	18	− 46·2	21·82	·00412	·00153

XXIX.—Differences of the Extreme Readings of the Three Magnetometers from the Monthly Means during the Extra Observations in 1843, together with the Ranges of the Three Magnetic Elements during each of the Observed Disturbances.

Date.	Westerly Declination.				Bifilar Magnetometer.				Balance Magnetometer.				Ranges.		
	Greater than Mean.		Less than Mean.		Reading greater than Mean.		Reading less than Mean.		Reading greater than Mean.		Reading less than Mean.		Declination.	Horizontal component.	Vertical component.
1843.	h.	′	h.	′	h.	Sc. Div.	h.	Sc. Div.	h.	Mic. Div.	h.	Mic. Div.	′	X=1.	Y=1.
Jan. 2	6	+ 0·03	6	−20·42	6	+ 16·9	6	− 6·8	6	+105·6	6	+ 71·0	20·45	0·00242	0·00031
Jan. 11	9	+ 0·14	9	−17·42	9	− 1·4	9	− 32·2	9	+119·4	10	+ 36·3	17·56	·00314	·00076
Feb. 6	8	+ 6·15	10	−36·75	10	+ 1·3	10	− 22·9	10	+ 77·4	11	+ 12·6	45·81	·00247	·00059
Feb. 13	11	+ 1·59	10	−13·58	11	+ 2·6	10	− 11·0	10	+ 12·8	11	+ 7·0	15·17	·00135	·00006
Feb. 14	10	+ 1·61	9	−17·22	9	+ 27·9	10	− 14·5	8	+ 20·3	9	− 24·5	17·38	·00438	·00043
Feb. 16	6	+ 1·42	8	−13·49	8	+ 11·4	8	− 8·5	8	+ 7·8	6	− 5·8	16·86	·00203	·00014
Feb. 23 }	...	....	...	....	...	....	...	....	...	....	20	− 22·5	} 25·70	·00438	·00169
Feb. 24 }	4	+16·03	9	− 4·53	5	+ 19·9	8	− 22·5	7	+148·3	...	....			
Feb. 25	11	+ 2·38	10	−12·66	10	+ 29·9	11	− 28·7	11	− 3·5	10	− 27·8	15·04	·00602	·00021
Mar. 4	11	+ 1·38	11	− 8·78	11	+ 5·3	12	− 11·2	10	+ 34·4	11	+ 3·5	10·16	·00169	·00030
Mar. 6	14	+11·24	11	−17·77	14	+ 29·8	17	− 40·4	9	+ 37·7	17	−128·3	29·41	·00708	·00168
Mar. 7	4	+10·94	8	− 8·49	5	+ 20·3	8	− 27·6	8	+292·7	0	+ 31·1	23·90	·00510	·00260
Mar. 9	8	+ 1·87	7	− 2·68	6	+ 2·2	7	− 16·3	7	+ 51·0	6	+ 20·3	4·01	·00200	·00030
Mar. 10	9	+ 2·01	8	− 2·95	8	+ 23·5	10	− 0·3	10	+ 14·6	8	− 10·4	3·86	·00254	·00010
Mar. 11	8	− 2·24	10	− 8·04	9	+ 16·1	9	− 19·9	10	+ 13·6	9	− 16·4	8·00	·00367	·00021
Mar. 12	13	+ 8·02	7	−39·59	5	+ 19·6	14	− 45·6	7	+ 37·3	14	−211·7	45·02	·00731	·00519
Mar. 18	3	+ 8·13	6	−11·23	6	+ 32·1	0	− 1·0	6	+ 51·0	2	− 6·5	23·37	·00465	·00072
Mar. 21	8	+ 1·96	9	− 8·03	8	+ 22·6	9	− 2·4	8	− 24·1	9	− 33·2	11·09	·00260	·00014
Mar. 22	3	+ 7·80	0	+ 1·82	3	+ 19·8	0	− 7·6	4	− 1·3	1	− 25·7	7·98	·00383	·00029
Mar. 29	6	+ 2·24	11	−20·76	10	+ 18·2	11	− 31·1	7	+123·9	10	−142·5	26·29	·00506	·00249
Apr. 5	7	+35·43	11	−25·84	5	+151·0	13	−125·7	6	+517·8	13	−259·1	63·01	·02927	·00755
Apr. 6	3	+13·32	10	−16·93	4	+ 18·3	14	−115·6	3	+157·4	14	−386·8	38·58	·01445	·00507
Apr. 7	18	+ 3·44	8	−18·74	8	+ 44·1	9	− 12·9	6	+ 43·5	18	− 36·2	21·22	·00609	·00125
Apr. 8	4	+ 0·87	5	−10·45	6	+ 12·8	7	− 4·2	6	+ 63·5	4	+ 28·0	13·48	·00203	·00062
Apr. 12	6	+ 9·48	9	−15·00	6	+ 17·9	9	− 14·9	7	+111·1	2	+ 6·7	26·66	·00423	·00134
Apr. 13	20	+ 4·78	18	+ 0·35	20	+ 5·9	19	− 24·3	18	+ 15·0	19	− 51·9	3·74	·00303	·00057
Apr. 18	6	+ 1·66	7	−12·61	7	+ 16·2	7	− 1·1	7	+ 98·1	8	+ 22·7	15·14	·00177	·00073
May 6	12	+12·85	12	−90·29	8	+ 5·4	11	−417·0	11	+316·4	11	−685·5	103·14	·04278	·00902
May 7	11	+10·01	14	− 8·04	11	− 38·3	13	− 52·2	11	− 71·0	14	−154·3	18·70	·00155	·00081
May 10	2	+ 0·44	6	− 8·02	6	+ 33·2	3	− 25·9	7	+ 40·6	2	+ 14·9	13·63	·00665	·00048
May 15	8	+ 0·28	9	−10·95	8	+ 21·1	9	− 13·0	9	+175·6	8	+ 21·6	11·78	·00389	·00129
June 2	22	+11·46	20	− 4·77	20	− 1·9	21	− 43·6	21	− 1·0	22	− 42·2	19·06	·00449	·00038
June 7	10	+ 7·35	11	−11·97	11	+ 15·5	12	− 28·1	10	− 26·6	12	− 90·0	19·32	·00429	·00060
June 13	7	+ 0·88	6	− 3·48	7	+ 25·2	6	− 19·7	6	+ 53·7	8	+ 20·1	3·95	·00461	·00032
June 30	18	+ 3·45	20	− 4·16	20	+ 0·2	21	− 16·2	21	− 12·7	18	− 80·0	8·74	·00200	·00068
July 1	6	+ 3·49	8	− 4·28	8	+ 28·3	9	− 7·8	8	+ 13·8	6	+ 2·0	9·44	·00389	·00014
July 4	8	+ 3·67	9	− 8·64	9	+ 22·8	10	+ 5·5	9	+ 10·8	10	+ 13·7	12·34	·00205	·00004
July 24	7	+ 1·64	10	−29·20	6	+ 51·4	10	− 32·0	9	+ 51·1	10	− 60·1	33·73	·00912	·00106
July 24	...	....	...	....	...	....	22	− 50·1	...	....	...	....	....	....	....
July 25	5	+29·61	11	−10·87	3	+121·5	11	− 80·3	3	+321·4	11	−129·4	45·49	·00199	·00409
Aug. 3	4	+ 2·93	6	− 1·39	4	+ 22·2	6	− 2·0	6	− 19·4	4	− 39·6	8·00	·00222	·00030
Aug. 3 }	...	....	...	....	...	.. ..	22	− 20·7	6	+133·2	0	− 23·0	23·66	·00696	·00169
Aug. 4 }	1	+ 6·75	6	−11·23	6	+ 22·6	...	....	...	....	...	....	....	....	....
Aug. 8	18	+24·00	20	+ 1·01	19	+ 16·6	18	− 42·0	22	− 36·1	19	−211·8	24·31	·00557	·00166
Aug. 22	1	+12·74	6	+ 4·47	3	+ 28·0	1	− 20·8	6	+ 74·9	5	− 36·8	13·95	·00581	·00106
Sept. 1	3	+ 7·40	6	− 4·17	5	+ 21·4	4	− 21·7	...	.. ..	...	....	16·50	·00409	....
Sept. 1	20	+13·00	...	....	...	....	20	− 22·2	...	....	...	....	} 12.19	·00390	....
Sept. 2	..	....	6	− 0·93	4	+ 5·0	...	....	...	....	...	....			
Sept. 18	12	+10·10	10	−12·48	11	+ 30·7	12	− 21·4	10	− 14·2	12	−100·6	22·58	·00514	·00083
Sept. 19	10	+ 6·60	7	−14·10	11	+ 28·9	10	− 8·2	7	+ 32·7	11	− 58·3	17·33	·00361	·00102
Oct. 4 }	23	+ 8·77	...	....	...	....	23	+ 3·1	...	....	...	....	} 30·13	·00664	·00096
Oct. 5 }	...	....	8	−17·92	8	+ 24·7	...	....	6	+ 26·8	0	− 69·6			
Oct. 16	10	+ 3·86	10	− 6·41	10	+ 38·1	10	+ 2·8	10	+ 14·9	11	− 1·6	10·27	·00348	·00017
Oct. 17	4	+ 1·18	2	− 9·94	4	− 3·7	2	− 15·8	2	+ 80·2	3	+ 49·6	8·59	·00159	·00023
Oct. 26	4	− 1·15	10	−18·10	7	+ 19·4	7	− 14·1	6	+ 90·8	11	+ 3·5	22·32	·00330	·00095
Nov. 2	12	+ 0·28	11	−14·45	11	+ 7·9	11	− 32·1	10	+ 16·2	12	− 88·8	14·73	·00394	·00096
Nov. 3	1	+ 5·57	8	− 4·22	8	+ 3·9	0	− 10·3	2	+ 32·6	23	+ 1·9	13·90	·00237	·00035
Dec. 6	8	+ 2·10	8	− 7·18	8	+ 2·9	10	− 10·8	9	+ 12·0	11	− 22·2	9·28	·00153	·00038
Dec. 8	9	+ 8·70	9	−22·07	6	− 4·2	9	− 46·5	8	+ 1·5	10	− 3·9	30·77	·00461	·00104
Dec. 11	7	+ 7·85	8	−11·22	11	+ 23·4	12	− 5·0	6	+ 21·3	12	− 61·0	20·30	·00302	·00082
Dec. 12	2	+ 6·97	6	− 9·55	7	+ 8·3	2	− 20·9	4	+ 39·3	10	− 16·8	19·21	·00312	·00055
Dec. 13	10	+ 4·59	8	− 3·65	10	+ 5·7	8	− 9·7	8	+ 28·0	10	+ 0·7	7·66	·00148	·00034
Dec. 27	...	....	...	....	23	+ 3·0	...	....	...	....	23	− 2·1	} 9·59	·00170	·00018
Dec. 28	3	+ 9·12	4	+ 0·21	...	......	2	− 13·9	4	+ 33·2	...	....			

TABLE XXX.—Differences of the Extreme Readings of the Three Magnetometers from the Monthly Means, for the Hours at which the Extreme Readings occurred during the Term-Day Observations in 1843, together with the Ranges of the Three Magnetic Elements during each Term-Day.

Date.	Westerly Declination.				Bifilar Magnetometer.				Balance Magnetometer.				Ranges.		
	Greater than Mean.		Less than Mean.		Reading greater than Mean.		Reading less than Mean.		Reading greater than Mean.		Reading less than Mean.		Declination.	Hor. Comp. of Force.	Ver. Comp. of Force.
1843.	h.	′	h.	′	h.	Sc. Div.	h.	Sc. Div.	h.	Mic. Div.	h.	Mic. Div.	′	X = 1.	Y = 1.
Jan. 18, 19	1	+ 4·05	11	− 5·32	12	+ 9·6	0	− 6·5	10	+ 7·1	20	− 15·0	13·59	0·00194	0·00031
Feb. 24, 25	11	+16·00	13	− 7·35	11	+ 7·3	12	−41·3	11	+30·9	13	−101·6	23·91	·00501	·00124
Mar. 22, 23	1	+ 4·61	7	−11·42	13	+26·8	13	− 8·8	7	+ 8·1	14	− 86·3	19·90	·00363	·00114
Apr. 19, 20	2	− 1·91	21	− 3·39	7	+ 4·1	0	− 2·0	8	− 8·6	2	− 0·7	10·95	·00263	·00028
May 26, 27	2	+ 0·26	10	−15·30	10	+20·5	22	−13·9	9	+ 7·0	10	− 88·3	22·74	·00489	·00096
June 21, 22	...	......	...	......	7	+ 3·8	19	− 3·7	20	+ 0·5	0	− 18·4	......	·00231	·00031
July 19, 20	1	− 0·77	20	− 2·95	8	− 1·3	0	− 1·0	21	+ 9·6	1	− 5·8	10·69	·00249	·00017
Aug. 25, 26	1	+ 2·19	9	− 6·08	9	+ 7·2	23	− 7·2	5	+28·9	16	− 28·1	15·17	·00388	·00063
Sept. 20, 21	14	+ 6·46	7	−16·55	5	+11·3	23	− 8·9	7	+16·8	15	−148·5	31·00	·00396	·00176
Oct. 18, 19	16	+ 9·33	9	− 6·68	16	+21·0	22	+ 4·6	22	+ 1·9	16	−117·7	16·80	·00283	·00127
Nov. 24, 25	13	+ 4·89	12	− 1·14	10	+14·0	0	0·0	5	+12·0	16	− 7·2	6·03	·00170	·00032
Dec. 20, 21	2	− 1·34	10	− 6·84	12	+12·1	8	− 2·0	3	+ 1·5	10	− 21·3	11·23	·00124	·00021

When the hours at which the extreme positions occur are between 10^{h} Gött. and 18^{h} Gött., approximate means have been taken, in order to deduce the differences between the extreme position and the mean position.

The differences of the greatest and least readings *in the year* from the monthly means for the hours at which the extremes occurred, together with the ranges for the year, are as follow :—

From the Daily Observations.

West Declination, greatest, Feb. 24^{d} 4^{h}, +15′·95 ; least, Feb. 6^{d} 10^{h}, −36′·75 ; Range of Declination =59′·29.
Bifilar Magnetometer Reading, greatest, July 25^{d} 4^{h}, +96·2 Sc. div. ; least, May 6^{d} 10^{h}, −79·1 Sc. div. ; Range of Hor. comp. =0·01839.
Balance Magnetometer Reading, greatest, April 5^{d} 6^{h}, +344·0 Mic. div. ; least, May 6^{d} 10^{h}, −257·2 Mic. div. ; Range of Ver. comp. =0·00599

From the Extra Observations, and from all the Observations.

West Declination, greatest, April 5^{d} 7^{h}, +35′·43 ; least, May 6^{d} 12^{h}, −90′·29 ; Range of Declination =126′·91.
Bifilar Magnetometer Reading, greatest, April 5^{d} 5^{h}, +151·0 Sc. div. ; least, May 6^{d} 11^{h}, −417·0 Sc. div. ; Range of Hor. comp. =0·05678.
Balance Magnetometer Reading, greatest, April 5^{d} 6^{h}, +517·8 Mic. div. ; least, May 6^{d} 11^{h}, −685·5 Mic. div. ; Range of Ver. comp. =0·01141.

From the Term-Day Observations.

West Declination, greatest, Feb. 24^{d} 11^{h}, +16′·00 ; least, Sept. 21^{d} 7^{h}, −16′·55 ; Range of Declination =32′·98.
Bifilar Magnetometer Reading, greatest, Oct. 18^{d} 16^{h}, +21·0 Sc. div. ; least, Feb. 24^{d} 12^{h}, −41·3 Sc. div. ; Range of Hor. comp. =0·00789.
Balance Magnetometer Reading, greatest, Feb. 24^{d} 11^{h}, +30·9 Mic. div. ; least, Sept. 20^{d} 15^{h}, −148·5 Mic. div. ; Range of Ver. comp. =0·00321

TABLE XXXI.—Means of the Quantities in the three preceding Tables for periods of Three Months, and for the Year 1843, with the Mean Positive and Negative Excesses of the Excursions of the Magnets.

Observations.	Period.	West Declination.			Bifilar Magnetometer.			Balance Magnetometer.			Ranges.		
		Above Mean.	Below Mean.	Excess.	Above Mean.	Below Mean.	Excess.	Above Mean.	Below Mean.	Excess.	Declination.	Hor. Comp.	Ver. Comp.
		′	′	′	Sc. Div.	Sc. Div.	Sc. Div.	Mic. Div.	Mic. Div.	Mic. Div.	′	X = 1.	Y = 1.
Daily	Spring	12·54	21·67	− 9·13	24·4	36·0	−11·6	253·7	68·5	+185·2	41·90	0·00669	0·00319
	Summer	5·91	17·08	−11·17	42·6	43·9	− 1·3	126·5	117·5	+ 9·0	31·97	0·01057	0·00230
	Autumn	7·80	11·84	− 4·04	26·0	20·7	+ 5·3	86·1	87·7	− 1·6	25·38	0·00623	0·00183
	Winter	5·16	6·69	− 1·53	11·8	13·9	− 2·1	70·7	37·0	+ 33·7	16·24	0·00329	0·00118
	The Year	7·86	14·32	− 6·46	26·2	28·6	− 2·4	134·2	77·6	+ 56·6	28·87	0·00669	0·00212
Term-Day.	Spring	6·23	7·39	− 1·16	12·7	17·4	− 4·7	10·1	62·9	− 52·8	18·25	0·00376	0·00089
	Summer	−0·25	9·12	− 9·37	7·7	6·2	+ 1·5	5·7	37·5	− 31·8	16·71	0·00323	0·00048
	Autumn	5·99	9·77	− 3·78	13·2	3·8	+ 9·4	15·9	98·1	− 82·2	20·99	0·00356	0·00122
	Winter	2·53	4·43	− 1·90	11·9	2·8	+ 9·1	6·9	14·5	− 7·6	10·28	0·00163	0·00028
	The Year	3·98	7·55	− 3·57	11·4	7·5	+ 3·9	9·6	53·2	− 43·6	16·55	0·00304	0·00072
Extra.	Spring	6·31	13·50	− 7·19	23·7	25·4	− 1·7	79·2	52·4	+ 26·8	21·29	0·00529	0·00143
	Summer	7·09	16·22	−11·13	23·7	60·9	−37·2	72·7	97·4	− 24·7	24·94	0·00728	0·00158
	Autumn	8·01	7·60	+ 0·41	21·2	15·3	+ 5·9	38·4	48·8	− 10·4	17·49	0·00436	0·00089
	Winter	4·53	11·00	− 6·47	6·6	18·8	−11·2	40·9	8·5	+ 32·4	16·34	0·00273	0·00060
	The Year	6·52	12·41	− 5·88	20·2	29·5	− 9·3	63·7	53·6	+ 10·1	20·40	0·00507	0·00121

The foregoing Table has been formed from the three preceding it by taking the means of the excesses or defects, and ranges, for periods of three months.

The extremes, given in Tables XXVIII. and XXIX., are evidently imperfect, as the observations include only a limited portion of the 24 hours; the conclusions to be drawn from the previous Table must, therefore, be very restricted.

From all the observations, the excursions of the declination-needle towards the east are shewn to exceed those towards the west; they all agree also in making this excess greatest in Summer.

The results of the horizontal component differ in the three kinds of observations; on the whole, the deviations from the mean seem to be more negative than positive.

For the vertical component, it has already been shewn that no result for ranges can be trusted that does not include observations between midnight and sunrise. The term-day observations which include the 24 hours give the excess negative; and although the number of days from which this result is obtained are few, yet it is true for 9 out of the 12 term-days, and for the remaining 3 the positive excess is very trifling.

TABLE XXXII.—Differences of the greatest and least Daily Means of Magnetic Declination, and of the Horizontal and Vertical Components of Magnetic Force, from the Monthly Means for each Month in 1843, together with the Monthly Ranges of the Daily Means.

Month.	Westerly Declination.				Horizontal Component.				Vertical Component.				Ranges.		
	Day.	Above Mean.	Day.	Below Mean.	Day.	Above Mean.	Day.	Below Mean.	Day.	Above Mean.	Day.	Below Mean.	Declination.	Hor. Comp.	Ver. Com
		′		′		0·00		0·00		0·00		0·00	′	0·00	0·0
January	20	3·34	12	2·27	16	0614	23	0423	11	0200	23	0240	5·61	1037	0440
February	24	3·28	6	4·07	4	0628	14	0511	24	0223	28	0107	7·35	1139	0330
March	7	3·50	29	2·61	22	0528	16	0542	7	0663	31	0432	6·11	1070	1095
April	6	3·54	20	1·72	29	0453	6	0814	5	0527	25	0197	5·26	1267	0724
May	30	2·11	6	1·97	29	0952	8	1391	12	0139	6	0266	4·08	2343	0405
June	14	2·95	20	4·24	10	0596	8	0491	17	0199	22	0114	7·19	1087	0313
July	8	3·23	24	3·62	24	1176	26	0801	25	0744	27	0205	6·85	1977	0949
August	22	3·63	24	1·79	3	0689	9	0803	22	0487	9	0406	5·42	1492	0893
September	28	3·11	21	1·70	18	0637	5	0527	11	0147	30	0264	4·81	1164	0411
October	3	2·51	19	3·20	19	0518	2	0543	17	0377	7	0442	5·71	1061	0819
November	6	2·99	30	2·30	24	0741	8	0734	15	0156	22	0144	5·29	1475	0300
December	6	1·87	1	2·11	25	0465	8	0519	2	0163	25	0120	3·98	0984	0283
The Year	Jan. 20	6·50	Nov. 30	5·53	Dec. 25	2048	Apr. 6	1776	Jan. 11	1205	Dec. 25	0848	12·03	3824	2053

The last line in the above Table contains the difference of the greatest and least daily means from the mean for the year.

Westerly Declination.—In opposition to the result obtained for the single observations, Table XXXI., the daily means deviate farther to the west of the mean than to the east of it.

The mean of the greatest daily means in each month is 3′·00 above the mean.

The mean of the least daily means in each month is 2′·63 below the mean.

The greatest deviation of a daily mean to the west of the mean for the month is 3′·63, occurring on August 22; the greatest deviation of a daily mean to the east of the monthly mean occurs on June 24, being 4′·24.

The greatest deviation of a weekly mean, as given Table I., to the west of the mean for the year, is 4′·11, occurring January 19—25; the greatest deviation of a weekly mean to the east of the mean for the year occurs December 21—27, being 4′·30.

The greatest range of the daily means for any month is that for February, being 7′·35; the least is that for December, being 3′·98. The whole range of the daily means for the year is 12′·03.

Horizontal Component.—The mean of the greatest daily means in each month is 0·000666 above the monthly means, the whole horizontal component being unity; the mean of the least daily means in each month is 0·000675 below the monthly means.

The greatest excess of a daily mean above the monthly mean is 0·001176, occurring July 24; the greatest defect of a daily mean from the monthly mean occurs May 8, being 0·001391. The greatest excess of a weekly mean, as given Table VIII., above the mean for the year, occurs December 21—27, being 0·004500; and the greatest defect of a weekly mean from the mean for the year occurs April 6—12, being 0·001304.

The greatest range of the daily means for any month is that for May, being 0·002343; the least is that for December, being 0·000984. The range of the daily means for the whole year is 0·003824.

Vertical Component.—The mean of the greatest daily means in each month is 0·000335 above the monthly means, the whole vertical component being unity. The mean of the least daily means in each month is 0·000245 below the monthly means.

The greatest excess of a daily mean above a monthly mean is that for July 25, being 0·000744; the greatest defect of a daily mean from a monthly mean is that for March 31, being 0·000432 below the mean for the month.

The greatest excess of a weekly mean, as given Table XV., above the mean for the year, occurs January 5—11, being 0·001056; the greatest defect of a weekly mean from the mean for the year occurs December 21—27, being 0·000792.

The greatest range of the daily means for any month is that for March, being 0·001095; the least is that for December, being 0·000283. The whole range of the daily means for the year is 0·002053.

TABLE XXXIII.—Greatest and Least Diurnal Ranges of the Magnetic Declination, Horizontal and Vertical Components of Magnetic Force, for each Month in 1843, as obtained from Tables VI., XIII., and XX.

Month.	Declination.				Horizontal Component.				Vertical Component.			
	Day.	Greatest Range.	Day.	Least Range.	Day.	Greatest Range.	Day.	Least Range.	Day.	Greatest Range.	Day.	Least Range.
		′		′		0·0		0·0		0·00		
January	28	11·85	5	3·40	9	0227	7	0029	28	1331	20	0059
February	6	49·03	1	3·19	24	0210	2	0045	24	1483	2	0099
March	29	25·78	1	3·60	7	0346	1	0046	7	3300	28	0103
April	6	33·38	22	5·30	5	1265	22	0144	5	3738	22	0145
May	6	25·50	13	6·36	6	0939	13	0170	6	2713	12	0145
June	30	25·60	19	7·00	12	0417	22	0187	13	0691	9	0139
July	24	32·85	6	7·63	25	1627	22	0173	25	2258	12	0129
August	4	19·10	5	7·16	4	0696	16	0196	4	1536	16	0142
September	18	21·83	30	7·07	9	0405	15	0132	22	0896	27	0226
October	26	25·14	10	3·55	16	0567	21	0130	5	1011	28	0130
November	3	12·74	27	2·68	3	0237	22	0042	3	0681	11	0105
December	11	17·39	16	2·97	11	0305	19	0028	8	1177	16	0083

INCLINOMETER.

TABLE XXXIV.—Monthly Means of the Observations of the Inclinometer for the Magnetic Dip.

Month.	No. of Observations.		Magnetic Dip.		
	A.M.	P.M.	23h Göttingen.	4h Göttingen.	Mean of all.
1843.			° ′	° ′	° ′
January	5	4	71 20·94	71 21·69	71 21·27
February	4	3	71 23·17	71 21·90	71 22·62
March	2	5	71 21·46	71 22·29	71 22·04
April	4	3	71 21·76	71 22·85	71 22·23
May	2	4	71 22·40	71 22·57	71 22·52
June	5	5	71 23·67	71 23·65	71 23·66
July	3	4	71 25·64	71 29·50	71 27·85
August	4	5	71 23·67	71 19·53	71 21·37
September	1	2	71 25·94	71 21·43	71 22·94
October	2	2	71 30·40	71 27·06	71 28·73
November	2	4	71 25·58	71 26·20	71 25·99
December	4	5	71 25·32	71 26·27	71 25·85
The Year	38	46	71 23·72	71 23·69	71 23·70

The inclinometer worked very imperfectly after the month of June, see Introduction, § 8. No correction has been applied for the error of axle, as in the previous year, when a correction of $-12'$ was made.

			° ′
The mean magnetic dip for the first six months of	1842, uncorrected,	was	71 24·39
………………………………………… ………	1843, …………	is	71 22·39
………………………… the year	1842, …………	was	71 23·95
………………………………………	1843, …………	is	71 23·70

ABSTRACTS OF THE RESULTS

OF THE

METEOROLOGICAL OBSERVATIONS,

MADE AT THE OBSERVATORY OF

GENERAL SIR T. M. BRISBANE, Bart.,

MAKERSTOUN.

1843.

In the following Tables, containing Daily Means, the places of the Sundays are occupied, as in the previous Tables of Magnetical Observations, by the means of the three preceding and three succeeding days; these means are considered as approximate weekly means, and have *not* been used in summations as approximate means for the Sundays.

Different methods have been adopted in order to obtain good approximate daily means from the nine daily observations; these will be found described after the various Tables. Means obtained by these methods have been compared with the actual means where a complete series of two-hourly observations has been made, and they have been found to differ very little.

In the following Tables, Spring has been considered as composed of the months of March, April, and May, and so on for the other seasons.

TABLE I.—Daily, Weekly, and Monthly Means of the Temperature of the Air, as deduced from the Readings of the Dry Bulb Thermometer for 1843.

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	°	°	°	°	°	°	°	°	°	°	°	°
1	[······]	40·6	31·2	49·4	47·4	46·8	56·9	55·9	61·0	[50·9]	32·7	31·8
2	32·2	35·8	32·7	[45·5]	43·7	50·2	[57·0]	57·2	64·4	51·5	37·6	40·7
3	30·1	29·2	34·3	47·4	47·2	45·0	59·9	58·0	[59·1]	52·0	36·7	[42·3]
4	39·8	34·3	30·1	44·9	50·5	[47·4]	57·9	57·5	55·3	56·6	47·6	49·0
5	35·6	[35·2]	[34·7]	44·2	44·6	42·7	58·9	55·7	54·0	56·8	[41·2]	46·1
6	36·8	32·8	41·3	45·1	45·8	47·6	57·8	[57·6]	62·7	57·2	46·7	43·5
7	39·6	39·6	38·9	45·1	[46·2]	52·3	57·0	57·0	56·8	54·3	42·9	49·0
8	[35·4]	39·8	30·9	40·7	44·9	54·0	56·2	60·0	58·6	[49·2]	35·8	46·1
9	35·3	35·9	34·4	[38·8]	47·1	52·9	[57·2]	57·7	59·9	43·8	32·8	45·5
10	32·9	35·2	35·5	34·1	44·3	54·3	58·6	55·5	[58·1]	41·9	38·1	[46·6]
11	32·5	36·6	41·7	33·6	47·1	[51·7]	57·0	58·6	60·2	41·4	43·9	46·2
12	24·4	[31·4]	[37·5]	34·0	50·0	48·0	56·6	59·5	59·9	39·6	[37·7]	46·4
13	34·2	31·9	39·5	35·4	52·5	47·2	58·6	[58·3]	53·5	35·6	39·4	46·2
14	31·5	25·4	37·5	50·7	[47·6]	53·8	57·6	57·7	54·6	35·8	34·8	48·4
15	[35·1]	23·7	36·7	48·3	46·9	57·6	60·1	57·9	58·5	[35·4]	37·4	47·6
16	36·8	24·8	38·5	[47·8]	44·9	57·3	[57·0]	60·9	57·6	32·7	36·7	39·7
17	39·0	25·2	45·2	50·4	44·2	52·0	56·4	63·3	[56·4]	35·7	44·6	[45·0]
18	45·0	18·6	46·8	48·9	42·7	[54·6]	57·1	64·0	57·3	32·9	37·1	44·2
19	45·1	[29·3]	[44·7]	53·3	43·3	48·2	52·3	65·2	51·9	33·9	[40·5]	43·2
20	39·5	35·2	41·5	47·1	47·0	55·0	51·7	[58·8]	58·4	46·1	40·4	46·9
21	31·5	35·4	46·2	52·8	[45·0]	57·7	54·7	53·3	58·1	45·8	42·2	40·9
22	[41·3]	36·4	49·9	47·7	44·8	56·9	55·2	54·7	53·0	[42·3]	42·2	48·9
23	40·6	36·0	47·6	[46·2]	46·1	56·7	[55·6]	52·1	55·1	49·5	35·7	49·8
24	45·7	37·1	42·0	45·7	46·0	54·8	54·4	53·0	[51·0]	40·9	31·1	[46·5]
25	45·2	34·3	41·0	44·1	48·4	[53·3]	56·1	56·9	47·5	37·4	30·8	49·4
26	45·3	[34·5]	[39·0]	39·8	51·5	52·3	61·5	54·1	48·1	33·8	[39·5]	46·4
27	51·1	34·7	33·2	44·8	50·2	50·3	56·9	[54·4]	44·1	34·6	48·9	43·9
28	46·0	33·5	36·0	43·7	[47·5]	48·8	54·8	56·5	44·1	42·3	48·5	44·5
29	[45·6]		34·0	43·8	42·6	52·7	57·2	54·4	44·2	[35·1]	42·3	46·2
30	45·1		39·1	[45·1]	47·0	55·9	[54·8]	51·8	57·1	33·9	42·8	44·6
31	45·8		48·1		45·2		56·6	57·4		33·3		[37·5]
Mean	38·7	33·0	39·0	44·6	46·5	52·0	56·8	57·3	55·2	42·3	39·6	45·2

The daily means, T, contained in Table I., were obtained from the nine daily observations as follows:— S being the sum of the nine observations, 18 the observation at 18^h, 10 at 10^h, then

$$T = \frac{S + 2 \times 18 + 10}{12}.$$

For the first week in January, the mean of the observations at 20^h and 5^h was taken for the mean of the day; and the second week, S being the sum of eight observations only, 3 × 20 was substituted for 2 × 18 in the previous formula.

TABLE II.—Means of the Maximum and Minimum Temperature of the Air for each Day in 1843, as deduced from the Self-Registering Thermometers.

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	°	°	°	°	°	°	°	°	°	°	°	
1	33·0	41·1	31·8	51·5	46·2	45·7	55·8	56·4	62·1	59·7	35·1	34·6
2	32·0	39·0	32·6	52·5	44·8	56·3	57·9	59·3	64·9	53·9	37·4	36·7
3	32·8	32·3	33·9	50·2	48·3	46·2	61·3	59·7	64·3	48·5	36·6	44·2
4	39·0 ?	29·9	30·7	44·4	50·1	45·3	56·7	59·0	56·4	56·4	44·3	48·5
5	35·5	32·1	36·7	45·8	46·1	43·3	59·5	56·1	52·7	58·6	38·9	49·4
6	37·5	33·0	42·4	44·7	47·2	46·8	59·8	55·5	61·6	58·7	43·1	42·3
7	37·5	38·2	40·5	45·8	49·3	52·2	56·7	54·6	56·2	55·9	44·6	48·1
8	31·5	40·6	32·6	41·9	45·3	54·2	57·0	63·2	58·7	48·9	37·6	45·9
9	31·9	......	34·5	39·1	47·1	53·0	58·2	60·8	62·0	44·4	33·1	45·2
10	35·3	34·7	38·1	35·1	44·4	55·8	58·9	54·5	58·7	44·8	37·1	44·4
11	33·2	35·5	41·7	35·7	48·4	51·9	59·7	57·0	62·6	40·5	43·0	47·2
12	26·1	37·6	47·2	35·0	47·8	50·6	56·3	59·6	64·3	41·7	38·2	44·9
13	29·2	32·9	40·0	34·2	54·0	47·6	59·3	61·3	55·4	36·8	42·8	46·8
14	34·8	26·9	37·8	45·3	54·6	52·0	57·8	57·0	51·6	39·4	35·8	47·1
15	......	23·3	38·3	50·5	45·8	56·2	60·0	56·5	61·1	34·8	37·1	50·7
16	......	26·7	37·3	50·5	45·2	54·0	59·3	63·4	59·7	34·1	37·0	37·8
17	37·2	26·6	44·3	52·1	44·7	51·9	55·2	66·0	58·8	35·6	43·7	43·8
18	43·2	21·6	51·5	49·0	44·3	51·8	58·4	65·1	57·3	35·2	37·1	42·2
19	44·3	28·0	46·9	55·5	40·9	48·9	54·1	65·4	51·8	33·3	38·0	44·0
20	43·2	33·6	44·7	46·4	49·0	56·7	51·0	58·2	57·7	43·3	40·5	45·2
21	35·1	34·3	47·8	50·5	45·1	57·8	55·8	52·2	61·0	48·8	43·5	42·2
22	35·7	36·0	50·7	48·9	45·3	56·3	54·9	56·6	54·0	48·4	42·8	45·0
23	40·0	36·3	50·3	45·1	46·2	59·0	51·7	51·3	55·0	49·3	33·9	49·1
24	45·0	37·3	40·6	44·3	47·7	53·1	51·1	53·2	57·1	45·9	31·9	52·2
25	45·3	35·7	43·9	45·8	47·8	51·6	52·0	56·9	48·3	39·2	32·4	48·1
26	45·3	36·0	40·0	42·9	51·1	53·7	60·6	56·0	46·5	37·1	39·5	48·0
27	49·0	35·9	34·1	44·8	51·7	48·7	58·3	53·4	44·3	34·3	49·4	44·0
28	47·5	36·0	38·2	46·4	46·0	49·6	57·9	54·6	44·7	41·9	48·9	43·7
29	48·0		35·9	43·7	43·1	51·9	59·0	56·4	42·4	41·7	45·8	46·0
30	47·0		38·5	49·2	47·3	53·9	57·6	52·5	55·5	32·1	39·2	45·0
31	46·5		50·5		45·3		59·2	59·6		36·2		44·6
Mean	38·7	33·4	40·5	45·6	47·1	51·9	57·1	57·8	56·2	43·9	39·6	45·1

Annual Variation of Temperature.—The mean temperature is least for the month of February and greatest for the month of August; the means for April, May, and December differ little from the mean for the year. The monthly means differ slightly in Tables I. and II.; one cause of this difference will evidently be found in the means for Sundays, included in Table II.; when these means are deleted, the monthly means from the self-registering thermometers are as follow:—

Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
39°·0	33°·4	40°·2	45°·3	46°·9	52°·1	57°·1	57°·9	55°·7	43°·4	39°·8	44°·9

These quantities differ from the means, Table I., from the observations of the dry bulb thermometer by

Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
+0°·3	+0°·4	+1°·2	+0°·7	+0°·4	+0°·1	+0°·3	+0°·6	+0°·5	+1°·1	+0°·2	−0°·3

These differences evidently have a law, the amount being greatest near the equinoxes and least near the solstices.*

---

* These differences and their variations are probably due to three causes; *first*, difference of exposure of the register and dry bulb thermometers; *second*, difference in the form of the diurnal curve for the various months; *third*, less conducting power of the spirit of wine of the minimum thermometer than of the mercury of the maximum. From the last, the registered minimum will, in general, be higher than the true minimum, and so much the more when the change of temperature is most rapid, or when the diurnal range is greatest, namely, near the Equinoxes. See Table III.

If we apply a correction to the monthly means, Table I., for the Sunday means awanting, which may be derived with sufficient accuracy from a comparison of the monthly means from the self-registering thermometers, when the Sundays are included and omitted, we obtain the true means for 1843 as follow :—

Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
38°·4	33°·0	39°·3	44°·9	46°·7	51°·8	56°·8	57°·2	55°·7	42°·8	39°·4	45°·4

Winter, 39°·0 ; Spring, 43°·6 ; Summer, 55°·3 ; Autumn, 46°·0.

Mean Temperature for the year 1843 = 46°·05.

It is evident that, for the year 1843, the months of January, February, and March constitute the meteorological season, Winter; and July, August, and September constitute Summer. The means for this mode of grouping are—

Jan., Feb., March, 36°·9 ; April, May, June, 47°·8 ; July, August, Sept., 56°·6 ; Oct., Nov., Dec., 42°·5.

TABLE III.—Mean Temperature of the Air at the Observation Hours for each Month and Quarter of 1843.

Period.	18^h.	20^h.	22^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.	Mean.	Range.
	°	°	°	°	°	°	°	°	°	°	°
January	38·10	37·81	38·07	39·80	40·60	40·05	39·30	38·54	38·07	38·72	2·79
February	31·85	31·99	32·66	34·94	35·74	35·20	33·35	32·18	32·05	32·98	3·89
March	34·84	35·85	39·22	43·07	44·76	44·64	42·08	38·84	37·91	39·07	9·92
April	39·26	42·70	47·32	49·47	50·76	50·17	47·44	44·15	42·40	44·55	11·50
May	42·10	45·18	48·45	50·62	51·47	50·98	49·80	47·13	44·47	46·57	9·37
June	48·35	51·00	53·41	55·05	55·92	56·25	55·47	52·99	49·24	51·97	7·90
July	52·13	56·33	59·73	61·28	62·41	61·30	59·66	56·67	54·10	56·83	10·28
August	50·10	54·26	59·46	63·13	64·91	64·76	62·25	57·92	55·25	57·29	14·81
September	47·80	50·96	56·56	61·77	64·24	64·10	60·80	55·50	52·63	55·22	16·44
October	39·12	39·88	43·60	47·01	47·77	47·07	43·32	40·95	40·17	42·27	8·65
November	38·22	38·68	39·93	42·30	43·33	42·03	39·15	38·49	38·24	39·59	5·11
December	44·40	44·44	45·98	46·85	47·35	46·28	45·07	44·77	44·59	45·26	2·95
Spring	38·73	41·24	45·00	47·72	49·00	48·60	46·44	43·37	41·59	43·40	10·27
Summer	50·19	53·86	57·53	59·82	61·08	60·77	59·13	55·86	52·86	55·36	10·89
Autumn	41·71	43·17	46·70	50·36	51·78	51·07	47·76	44·98	43·68	45·69	10·07
Winter	38·12	38·08	38·90	40·53	41·23	40·51	39·24	38·50	38·24	38·99	3·15
The Year	42·19	44·09	47·03	49·61	50·77	50·24	48·14	45·68	44·09	45·86	8·58

In obtaining the means for the month of January, the observations in the first week were rejected; no observation having been made at 18^h in the second week, a correction was applied to the mean for that hour of $-3°·29$, obtained from Table I. as follows :—

{Mean temp., Jan. 9—31 = 40°·32 *minus*, mean temp., Jan. 16—31 = 43°·81} = − 3°·29.

The means were afterwards corrected by −0°·9, in order to render the mean for the month similar to that obtained, Table I., from the whole month.

Diurnal Variation of Temperature.—The period of minimum temperature is not indicated by the above observations. The maximum temperature occurs nearly at the following periods in the means for the four meteorological seasons :—

Spring, maximum temperature, occurs at $1^h\ 30^m$ P.M. Makerstoun mean time.
Summer, ... $1^h\ 45^m$ ....
Autumn, ... $1^h\ 35^m$ ....
Winter, ... $1^h\ 10^m$ ....
The Year, ... $1^h\ 30^m$ ....

If we examine the monthly means separately, it will be found that the maximum occurs about the same time, namely, $1^h\ 10^m$ in the months of January, February, May, July, October, November, and December, and considerably later in the other months, being about $2^h\ 40^m$ in June. If we group the months into the *astronomical* quarters, we arrive at the following result:—

Spring, maximum temperature, occurs at $1^h\ 40^m$ P.M. Makerstoun mean time.
Summer, ... $1^h\ 30^m$ ....
Autumn, ... $1^h\ 50^m$ ....
Winter, ... $1^h\ 0^m$ ....

Or, that the maximum temperature occurs later in the day at the equinoxes than at the solstices. It will require other years observations to prove the generality of this fact; but it seems to bear some relation, and that apparently not of difficult explanation, to the amount of the diurnal range of temperature.

The mean temperature for the year occurs at $8^h\ 22^m$ A.M.
.... $6^h\ 59^m$ P.M.
The interval between these periods is $10^h\ 37^m$

The critical interval varies with each month, and is greatest in June, being $11^h\ 46^m$, and least in February, being $8^h\ 11^m$.

TABLE IV.—Errors of the Approximate Mean Temperatures for each Month and Quarter in 1843, deduced from one or two Daily Observations.

Periods.	True Mean.	Approximate Means (+) greater, or (−) less than true Means.											
		Max. and Min.	18^h and 5^h.	18^h and 6^h.	19^h and 6^h.	20^h and 7^h.	20^h and 8^h.	21^h and 8^h.	22^h and 9^h.	22^h and 10^h.	23^h and 10^h.	18^h and 0^h.	8^h.
	°	°	°	°	°	°	°	°	°	°	°	°	°
January	38·72	+0·3	+0·15	−0·02	−0·10	−0·36	−0·55	−0·48	−0·54	−0·65	−0·22	+0·23	−0·18
February	32·98	+0·4	+0·08	−0·38	−0·34	−0·65	−0·90	−0·73	−0·59	−0·63	−0·06	+0·41	−0·80
March	39·07	+1·2	+0·03	−0·61	−0·36	−0·92	−1·73	−0·88	−0·28	−0·51	+0·45	−0·12	−0·23
April	44·55	+0·7	−0·52	−1·20	−0·34	−0·31	−1·13	+0·03	+0·74	+0·33	+0·84	−0·17	−0·40
May	46·57	+0·4	−0·33	−0·62	+0·15	+0·25	−0·42	+0·40	+0·55	−0·11	+0·43	−0·21	+0·56
June	51·97	+0·1	+0·13	−0·06	+0·60	+0·64	+0·02	+0·62	+0·61	−0·65	−0·24	−0·27	+1·02
July	56·83	+0·3	−0·53	−0·94	+0·11	+0·42	−0·33	+0·52	+0·72	+0·08	+0·47	−0·13	−0·16
August	57·29	+0·6	−0·49	−1·12	−0·08	−0·12	−1·21	+0·10	+0·73	+0·06	+0·98	−0·68	+0·63
September	55·22	+0·5	−0·10	−0·92	−0·13	−0·67	−1·99	−0·59	+0·09	−0·63	+0·67	−0·44	+0·28
October	42·27	+1·1	−0·12	−1·05	+0·86	−1·27	−1·86	+0·93	−0·19	−0·39	−0·46	+0·79	−1·32
November	39·59	+0·2	−0·19	−0·91	−0·79	−0·84	−1·01	−0·70	−0·45	−0·51	+0·08	+0·67	−1·10
December	45·26	−0·3	−0·23	−0·53	−0·52	−0·58	−0·66	−0·27	+0·07	+0·02	+0·24	+0·36	−0·49
Spring	43·40	+0·8	−0·28	−0·82	−0·19	−0·33	−1·10	−0·16	−0·34	−0·11	+0·57	−0·18	−0·03
Summer	55·36	+0·3	−0·29	−0·70	+0·21	+0·31	−0·50	+0·41	+0·58	−0·17	+0·40	−0·36	+0·50
Autumn	45·69	+0·6	−0·13	−0·96	−0·59	−0·92	−1·66	−0·74	−0·18	−0·50	+0·41	+0·34	−0·71
Winter	38·99	+0·1	0·00	−0·31	−0·32	−0·52	−0·70	−0·50	−0·36	−0·42	−0·02	+0·33	−0·49
The Year	45·86	+0·5	−0·17	−0·70	−0·25	−0·36	−0·98	−0·24	+0·09	−0·30	+0·34	+0·04	−0·18
The 12 months.													
Mean of Errors		0·5	0·24	0·70	0·36	0·59	0·98	0·52	0·46	0·38	0·43	0·37	0·60
Range of Errors		1·5	0·68	1·18	1·65	1·91	2·01	1·81	1·33	0·98	1·44	1·47	2·34

The quantities given as the true means are from Table III.; they are, therefore, only approximate, but they must be very near the truth. The errors of the mean from the maximum and minimum thermometer are obtained from Table II., *after* deleting the means for Sundays. The means for the *odd* hours were obtained by taking the mean of the even hours between which the odd hours lie.

The couple of hours best fitted for observations, in order to obtain the best approximation to the monthly means, must evidently be determined by

1*st*, The smallness of the *mean* of the monthly errors,
2*d*, The smallness of the *range* of the monthly errors.

The smaller the second is the more nearly will the approximate curve resemble the true curve in *form*, and the smaller the first the more nearly will the approximate curve approach the true curve in position.

In the foregoing Table, the range of the errors, and their mean for the 12 months (independent of sign), are given for each couple of hours. The hours which seem best to satisfy the two conditions are—

1st, 18^h and 5^h Göttingen, or $5^h\ 10^m$ A.M. and $4^h\ 10^m$ P.M. Makerstoun mean time.
2d, 22^h and 10^h .... or $9^h\ 10^m$ A.M. and $9^h\ 10^m$ P.M. ....
3d, 18^h and 0^h .... or $5^h\ 10^m$ A.M. and $11^h\ 10^m$ A.M. ....
4th, 19^h and 6^h .... or $6^h\ 10^m$ A.M. and $5^h\ 10^m$ P.M. ....
5th, 23^h and 10^h .... or $10^h\ 10^m$ A.M. and $9^h\ 10^m$ P.M. ....
6th, 22^h and 9^h .... or $9^h\ 10^m$ A.M. and $8^h\ 10^m$ P.M. ....

The first couple of hours is considerably superior to any of the others, the mean of the errors being only 0°·24, and their range only 0°·68, while the error for the year is only −0°·17. The second couple of hours is more convenient. For ordinary purposes, the maximum and minimum register thermometers seem sufficiently accurate.*

TABLE V.—Diurnal Ranges of Temperature for each Civil Day in 1843, as deduced from the Observations of the Maximum and Minimum Register Thermometers.

Civil Day.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	°	°	°	°	°	°	°	°	°	°	°	°
1	9·2	7·3	10·9	13·7	28·5	5·7	16·9	12·0	17·6	11·4	17·7	8·4
2	4·4	1·1	8·2	13·6	19·0	19·5	17·0	13·9	16·8	11·0	15·9	22·8
3	24·1	4·3	8·4	11·9	20·0	3·5	9·6	17·0	12·4	19·8	18·0	12·0
4	4·9	17·3	21·0	13·1	23·2	6·9	20·9	20·0	13·9	16·0	20·4	5·9
5	3·0	3·2	15·4	9·1	14·4	1·2	15·0	19·9	31·8	12·7	16·2	2·0
6	17·5	7·9	15·6	20·8	16·6	11·0	13·3	18·7	23·9	8·5	16·6	7·9
7	7·3	6·8	12·5	13·0	17·4	13·5	22·4	21·0	29·5	13·0	7·8	11·3
8	3·9	2·9	22·9	12·8	9·6	9·9	18·5	13·9	36·5	5·8	7·2	4·9
9	18·6	......	19·3	9·6	9·5	7·9	12·1	17·4	29·3	18·0	11·2	8·0
10	5·3	6·5	12·1	13·7	9·5	12·5	15·3	21·3	24·6	8·6	8·9	11·5
11	5·0	6·2	22·5	17·1	24·9	12·9	12·7	23·7	15·6	8·0	11·1	7·8
12	11·0	4·7	9·9	22·5	22·6	4·0	21·7	23·8	15·7	6·5	10·1	8·8
13	17·4	8·0	8·7	10·8	9·0	8·6	13·7	27·9	21·0	17·0	8·7	2·7
14	2·0	2·6	18·6	24·0	16·4	17·1	23·3	27·5	28·3	13·8	14·6	3·8
15	......	9·7	23·1	9·8	6·5	18·3	17·1	14·2	15·3	18·6	13·9	5·0
16	......	14·2	11·2	13·6	1·8	25·0	16·3	15·5	28·9	24·9	11·4	10·0
17	15·9	13·9	6·9	21·0	6·8	19·9	19·9	22·2	20·5	8·5	14·5	14·5
18	6·9	29·5	19·9	18·8	11·2	13·1	11·6	27·2	20·5	16·1	9·5	10·0
19	5·9	19·6	12·8	17·7	21·0	7·1	13·5	26·6	30·9	23·5	15·5	4·8
20	2·4	6·3	10·9	21·7	15·8	24·8	11·0	12·9	21·3	15·6	9·2	7·6
21	16·7	5·9	18·4	15·6	4·5	16·8	13·1	22·4	9·2	9·0	16·0	7·7
22	20·7	4·1	16·2	6·5	3·6	20·4	24·1	9·9	30·8	19·1	6·9	17·7
23	8·0	2·7	10·0	8·5	4·2	27·4	11·0	22·1	33·0	9·6	10·3	5·7
24	4·3	4·1	8·9	25·9	5·0	21·6	20·6	33·4	11·2	5·6	10·3	4·8
25	4·1	3·0	4·9	11·9	8·1	8·9	31·2	19·7	6·0	16·9	9·1	6·5
26	4·2	6·6	11·0	14·4	19·2	11·9	14·3	21·1	11·5	18·0	26·1	5·3
27	12·2	6·7	3·7	24·7	10·3	14·4	15·8	21·3	11·8	22·1	3·8	9·6
28	1·5	6·6	9·3	6·5	6·3	11·3	17·5	20·7	14·1	12·5	6·1	10·5
29	12·2		26·0	20·6	18·3	17·5	15·0	14·6	23·6	4·5	3·4	3·0
30	1·2		27·6	13·8	22·4	16·8	16·8	30·7	18·0	11·4	21·4	3·1
31	10·5		11·5		6·1		17·5	23·3		15·9		6·1
Mean	9·0	7·8	14·1	15·2	13·3	13·6	16·7	20·2	20·8	13·6	12·4	8·1

---

* There are three couples of homonymous hours given in the Table, but only one couple gives satisfactory results. It will be found that twelve or thirteen combinations of hours, having the common interval of eleven hours (nearly the critical interval), will give a mean error for the *year* from a third to a half less than that from the twelve combinations of homonymous hours, the combinations commencing with 10^h P.M. and 9^h A.M., 11^h P.M. and 10^h A.M., and so on to the twelfth or thirteenth couple.

Diurnal Range of Temperature.—The diurnal ranges deduced from the means, Table III., are imperfect, as the hours of the minima are not included in the Summer months. Making every allowance for this deficiency, there is little difficulty in perceiving that the ranges are greater, on the whole, for the months near the Equinoxes than for the Summer months. This fact will be seen more distinctly in the means at the foot of Table V. From this Table, we find that the smallest mean of the diurnal ranges occurs in February and December, the mean of the ranges increases till April, diminishes in May and June, and again increases till August and September, when it is a maximum.*

From Table III., the range of the mean diurnal curve for the year must be about 9°.

From Table V., the mean of all the diurnal ranges for the year =13°·7.

TABLE VI.—Extremes of Temperature for each Month from the Register Thermometers; Extremes of Daily Mean Temperature for each Month, deduced from the Daily Observations; and Extreme Diurnal Ranges for each Month from the Register Thermometers.

Month.	Extreme Temperatures.						Extremes of Mean Daily Temperature.						Extreme Diurnal Ranges.			
	Highest.		Lowest.		Range.	Mean.	Highest.		Lowest.		Range.	Mean.	Greatest.		Least.	
	d.	°	d.	°	°	°	d.	°	d.	°	°	°	d.	°	d.	°
January	27	55·1	15	19·9	35·2	37·5	27	51·1	3	30·1	21·0	41·0	3	24·1	30	1·2
February	1	44·8	18	6·9	37·9	25·8	1	40·6	18	18·6	22·0	29·6	18	29·5	2	1·1
March	18	61·5	4	20·2	41·3	40·8	22	49·9	4	30·1	19·8	40·0	30	27·6	27	3·7
April	19	64·4	12	23·8	40·6	44·1	19	53·3	11	33·6	19·7	43·4	24	25·9	22	6·5
May	14	62·8	19	30·4	32·4	46·6	13	52·5	29	42·6	9·9	47·5	1	28·5	16	1·8
June	23	72·7	6	41·3	31·4	57·0	21	57·7	5	42·7	15·0	50·2	23	27·4	5	1·2
July	14	69·5	25	36·4	33·1	52·9	26	61·5	20	51·7	9·8	56·6	25	31·2	3	9·6
August	18	78·7	24	36·5	42·2	57·6	19	65·2	30	51·8	13·4	58·5	24	33·4	22	9·9
September	8	77·0	29	30·6	46·4	53·8	2	64·4	27 28	44·1	20·3	54·2	8	36·5	25	6·0
October	1	65·4	19	21·6	43·8	43·5	6	57·2	16	32·7	24·5	44·9	16	24·9	29	4·5
November	4	54·5	26	26·5	28·0	40·5	27	48·9	25	30·8	18·1	39·8	26	26·1	29	3·4
December	24	54·6	2	25·3	29·3	39·9	23	49·8	1	31·8	18·0	40·8	2	22·8	5	2·0

Extremes of Temperature, 1843.

Highest temperature occurred …………… August 18, = 7° ·7
Lowest …………………………………… February 18, = 6°·9 } range = 71°·8, mean = 42°·8.

Highest daily mean temperature occurred August 19, = 65°·2
Lowest ……………………………… February 18, = 18°·6 } range = 46°·6, mean = 41°·9.

Highest weekly mean temperature occurred August 14—19, = 61°·5
Lowest …………………………………… February 13—18, = 24°·9 } range = 36°·6, mean = 43°·2.

Highest monthly mean temperature occurred August, = 57°·3
Lowest …………………………………… February, = 33°·0 } range = 24°·3, mean = 45°·1.

In each case, the interval between the highest and lowest is exactly six months.

The greatest diurnal range of temperature occurred ……………… September 8, = 36°·5
The lowest ………………………………………………… February 2, = 1°·1
The greatest range of temperature for a month occurred ………… February 18—March 18, = 54°·6
The greatest range of daily mean temperature for a month occurred February 18—March 18, = 28°·2

---

* In this volume, I have followed the practice of meteorologists, and have grouped the months into the *meteorological* seasons. As far as the results for the year 1843 go, the value of this mode of grouping seems very questionable. With the single exception of the mean temperature, the facts (diurnal range, critical intervals, and periods of maxima) are more directly related to the *astronomical* seasons. Even for the mean temperature each year would require a particular mode of grouping; it is only on the average of a number of years that June, July, and August are entitled to be called Summer. In 1843, it will be seen that July, August, and September are the three months with the highest mean temperature.

The cause of the diminished diurnal range in the midsummer months is obviously due to the sun's approach to perpetual apparition, as has been pointed out elsewhere.—See Professor FORBES'S Supplementary Report on Meteorology, Report Brit. Assoc. 1840, page 52.

TABLE VII.—**Daily, Weekly, and Monthly Means of the Temperature of Evaporation, as deduced from the Nine Daily Readings of the Wet Bulb Thermometer in 1843.**

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	°	°	°	°	°	°	°	°	°	°	°	°
1	[.....]	38·2	29·3	47·5	43·9	46·4	53·2	53·9	59·0	[48·1]	32·1	31·4
2	29·4	33·4	30·5	[43·4]	41·6	49·3	[53·0]	54·7	61·9	47·6	37·2	39·9
3	29·1	28·3	31·4	44·3	44·6	43·3	55·6	55·2	[55·8]	49·4	36·5	[40·7]
4	36·5	32·0	28·3	43·3	46·5	[45·7]	52·5	55·1	50·2	53·9	45·5	47·3
5	32·2	[33·8]	[32·6]	41·7	40·6	40·9	57·7	51·4	50·4	53·6	[39·6]	43·4
6	35·5	31·2	39·7	43·0	42·3	45·7	54·4	[55·0]	59·6	55·0	44·3	40·1
7	37·6	38·6	36·7	42·9	[43·0]	48·9	53·6	55·1	52·8	51·4	40·9	46·8
8	[33·6]	39·6	29·2	38·6	42·3	50·2	53·7	59·1	54·7	[47·5]	33·1	43·1
9	34·2	34·1	32·6	[36·0]	44·4	49·7	[53·8]	53·9	56·2	42·6	31·0	44·9
10	31·2	32·8	34·7	30·3	41·9	49·9	54·3	52·0	[55·5]	41·5	38·0	44·8
11	30·8	33·6	40·6	30·1	43·8	[48·8]	52·3	55·9	59·4	41·1	42·9	44·7
12	23·7	[29·5]	[35·8]	31·2	46·9	45·7	54·6	57·3	58·9	36·7	[36·7]	45·0
13	33·5	30·3	36·8	32·2	50·5	46·0	56·1	[56·0]	51·3	33·0	38·5	44·5
14	29·1	23·9	35·4	46·7	[45·3]	51·4	54·2	54·3	52·6	33·5	33·6	45·9
15	[33·7]	22·2	34·8	45·2	45·3	52·7	55·5	56·8	56·3	[33·3]	36·5	44·9
16	34·5	23·6	37·2	[44·2]	44·0	51·7	[54·0]	59·7	55·2	30·5	35·5	37·5
17	37·7	24·3	43·7	46·7	41·5	49·0	54·3	61·9	[54·2]	34·6	42·9	[43·0]
18	44·0	17·5	45·1	45·4	39·7	[50·5]	54·3	60·8	55·4	31·4	35·9	43·2
19	44·1	[28·1]	[43·0]	49·2	39·5	46·1	49·9	61·2	49·6	31·8	[39·2]	41·5
20	38·4	32·2	40·1	44·1	43·5	50·3	49·5	[55·9]	56·3	44·2	39·3	45·2
21	30·2	35·0	44·7	49·1	[43·0]	53·0	50·7	49·7	54·4	43·4	41·5	40·3
22	[39·8]	36·1	47·0	46·4	44·4	51·0	53·3	52·8	50·7	[40·1]	40·0	46·7
23	39·3	35·6	45·8	[43·2]	46·0	52·5	[52·5]	48·9	52·6	46·1	35·4	47·8
24	43·8	36·3	40·9	41·8	45·1	51·2	49·3	49·8	[47·6]	39·2	30·7	[45·0]
25	43·2	33·2	38·5	41·0	47·4	[49·1]	53·0	53·5	44·8	35·7	30·5	47·9
26	42·8	[33·2]	[37·0]	37·0	50·1	48·9	59·4	52·5	42·7	32·0	[38·1]	44·8
27	49·2	32·7	31·7	41·2	48·2	46·8	52·5	[51·6]	40·6	32·8	46·8	42·8
28	41·3	31·9	33·1	42·0	[45·8]	44·3	52·7	54·9	40·7	41·2	45·9	43·2
29	[42·7]		31·8	41·9	40·3	48·1	54·3	50·3	42·2	[34·0]	39·1	43·9
30	40·5		37·5	[42·5]	44·3	51·1	[53·5]	48·6	55·0	33·1	42·4	42·2
31	44·1		45·9		44·8		52·7	54·0		32·6		[36·0]
Mean	36·8	31·5	37·1	41·7	44·2	48·6	53·6	54·6	52·4	40·3	38·3	43·4

The daily means have been obtained from the daily observations by the formulæ already given, Table I., for the dry bulb thermometer.

Annual Variation of the Temperature of Evaporation.—This follows the same law as the temperature of the air, Table I. The greatest monthly mean is that for August, the least is that for February.

The means for the meteorological seasons are as follow :—

Winter,	Dec., Jan., Feb.,	37°·2	Jan., Feb., Mar.,	35°·1
Spring,	Mar., Apr., May,	41°·0	Apr., May, June,	44°·8
Summer,	June, July, Aug.,	52°·3	July, Aug., Sept.,	53°·5
Autumn,	Sept., Oct., Nov.,	43°·7	Oct., Nov., Dec.,	40°·7

The year 1843, 43°·54.

TABLE VIII.—**Hourly Means of the Temperature of Evaporation, as deduced from the Readings of the Wet Bulb Thermometer, at the Observation Hours for each month in 1843.**

Period.	18^h.	20^h.	22^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.	Range.
	°	°	°	°	°	°	°	°	°	°
January	36·30	36·17	36·18	37·44	38·12	37·87	37·48	36·53	36·09	2·03
February	30·65	30·65	31·03	32·78	33·40	33·20	31·81	30·92	31·10	2·75
March	33·76	34·71	37·40	40·31	41·31	41·10	39·48	37·34	36·46	7·55
April	37·98	40·72	43·85	44·83	45·69	45·20	43·70	41·80	40·35	7·71
May	41·14	43·47	45·51	46·85	47·11	47·05	46·09	44·72	43·07	5·97
June	46·41	48·09	49·40	50·25	51·17	51·17	50·90	49·10	47·05	4·76
July	50·61	53·66	55·34	56·20	56·78	55·86	55·49	53·79	52·12	6·17
August	49·27	52·71	56·13	58·47	59·12	58·80	57·87	55·90	54·07	9·85
September	46·82	49·88	53·87	56·80	57·93	57·42	56·41	53·64	51·50	11·11
October	37·99	38·82	41·33	43·72	43·83	43·52	41·23	39·48	38·80	5·84
November	37·32	37·80	38·75	40·24	41·06	39·95	37·94	37·55	37·27	3·79
December	42·81	42·84	43·70	44·76	45·03	44·32	43·27	42·98	42·88	2·22
Spring	37·63	39·63	42·25	44·00	44·70	44·45	43·09	41·29	39·96	7·07
Summer	48·76	51·49	53·62	54·97	55·69	55·28	54·75	52·93	51·08	6·93
Autumn	40·71	42·17	44·65	46·92	47·61	46·96	45·19	43·56	42·52	6·90
Winter	36·59	36·55	36·97	38·33	38·85	38·46	37·52	36·81	36·69	2·30
The Year	40·92	42·46	44·37	46·05	46·71	46·29	45·14	43·64	42·56	5·79

The observations in the first week of January were not made use of in obtaining the hourly means for that month. No observation having been made at 18^h in the second week, a correction was applied to the mean for that hour of −3°·11, obtained from Table VII. as follows :—

{Mean temp. Jan. 9—31· = 37°·99 *minus* mean temp. Jan. 16—31 = 41°·10} = −3°·11.

The means were afterward corrected by −1°·00, in order to render the mean for the month from these means equal to that obtained, Table VII., from all the daily observations.

Diurnal Variation of the Temperature of Evaporation.—The maximum temperature of evaporation occurs rather later in the day than the maximum temperature of the air in Spring, and rather earlier in the day in Summer and Autumn. The hours of the maximum, Makerstoun mean time, for the four meteorological seasons, with their differences from the hours of the maximum temperature of the air (Table III.), are as follow :—

Spring,	$1^h\ 35^m$,	occurring later than max. temp. of air by	5^m.
Summer,	$1^h\ 20^m$,	……… earlier ………………………	25^m.
Autumn,	$1^h\ 10^m$,	………………………………………	25^m.
Winter,	$1^h\ 10^m$,	………………………………………	0^m.
The Year,	$1^h\ 15^m$,	………………………………………	15^m.

The period of the minimum is not to be obtained from the nine daily observations.

The mean temperature of evaporation for the year occurs at $8^h\ 18^m$ A.M.
……………………………………………………………… $7^h\ 19^m$ P.M.

The interval between the two periods is $11^h\ 1^m$.

Range of the Diurnal Variation of the Temperature of Evaporation.—The ranges in the previous Table are imperfect, on account of the minimum being awanting in the Summer months ; but it seems as evident here, as in the case of the temperature of the air, that the range is less in the Midsummer months than for the months immediately preceding and succeeding them.

TABLE IX.—Daily, Weekly, and Monthly Means of the Pressure of Aqueous Vapour in inches of Mercury, as deduced from Tables I. and VII.

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1	[......]	0·221	0·162	0·322	0·264	0·326	0·374	0·403	0·483	[0·324]	0·193	0·191
2	0·154	·183	·167	[·275]	·256	·355	[·371]	·410	·529	·300	·236	·254
3	·170	·166	·166	·272	·281	·278	·404	·414	[·423]	·337	·232	[·257]
4	·197	·173	·157	·279	·286	[·306]	·346	·417	·319	·396	·296	·321
5	·163	[·200]	[·184]	·253	·225	·253	·471	·344	·338	·386	[·245]	·268
6	·211	·178	·244	·269	·247	·301	·396	[·413]	·481	·417	·280	·227
7	·220	·241	·210	·267	[·258]	·322	·384	·423	·366	·359	·250	·310
8	[·191]	·259	·163	·228	·257	·333	·395	·498	·394	[·331]	·177	·261
9	·204	·195	·184	[·205]	·278	·334	[·387]	·383	·419	·275	·174	·306
10	·177	·178	·210	·150	·255	·322	·384	·361	[·423]	·275	·245	[·293]
11	·174	·177	·258	·151	·265	[·327]	·351	·426	·504	·272	·281	·294
12	·141	[·164]	[·210]	·166	·301	·296	·414	·453	·493	·202	[·227]	·299
13	·202	·172	·206	·165	·357	·312	·431	[·432]	·365	·178	·241	·290
14	·156	·134	·201	·288	[·294]	·365	·393	·394	·385	·184	·197	·296
15	[·202]	·125	·199	·282	·300	·354	·398	·458	·437	[·186]	·224	·283
16	·192	·135	·225	[·270]	·294	·333	[·396]	·504	·418	·167	·212	·217
17	·229	·143	·284	·291	·249	·327	·408	·541	[·408]	·207	·273	[·273]
18	·293	·107	·297	·280	·228	[·333]	·401	·501	·428	·180	·215	·285
19	·294	[·166]	[·275]	·317	·217	·303	·345	·499	·342	·177	[·243]	·260
20	·238	·167	·249	·271	·260	·323	·342	[·431]	·438	·285	·246	·298
21	·174	·218	·294	·320	[·273]	·361	·337	·329	·392	·271	·271	·260
22	[·250]	·228	·304	·315	·304	·319	·397	·390	·356	[·245]	·239	·308
23	·243	·223	·303	[·265]	·324	·360	[·375]	·324	·380	·289	·222	·323
24	·281	·223	·261	·238	·306	·348	·308	·335	[·312]	·238	·186	[·299]
25	·273	·196	·223	·239	·331	[·317]	·379	·383	·282	·208	·186	·331
26	·263	[·194]	[·220]	·207	·359	·322	·489	·389	·229	·179	[·237]	·294
27	·342	·181	·182	·235	·328	·296	·357	[·363]	·231	·185	·311	·279
28	·224	·182	·174	·264	[·307]	·256	·385	·423	·233	·264	·295	·281
29	[·259]		·176	·261	·241	·298	·399	·331	·262	[·202]	·220	·277
30	·217		·224	[·260]	·277	·334	[·386]	·320	·418	·198	·283	·258
31	·286		·299		·308		·365	·390		·196		[·220]
Mean	0·220	0·184	0·223	0·253	0·281	0·320	0·387	0·409	0·382	0·245	0·238	0·280

The quantities in Table IX. have been deduced from Tables I. and VII. by means of Dr APJOHN's formula, taken approximately, namely (Proceedings of the Royal Irish Academy, 1840),

$$f'' = f' - \frac{d}{88} \times \frac{29{\cdot}7}{30{\cdot}0}, \text{ the temperature of evaporation being } \textit{above } 32^\circ$$

$$f'' = f' - \frac{d}{96} \times \frac{29{\cdot}7}{30{\cdot}0}, \ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textit{below } 32^\circ$$

Where f'' is the tension of aqueous vapour in the air, given in the previous Table; f', the tension of aqueous vapour, the air being saturated at the temperature of evaporation; d, the difference between the temperatures of the air and of evaporation; 29·7, the mean barometric pressure. The values of f' were obtained from the Table, page xl., Introduction to the Greenwich Observations, 1842. The errors for the monthly or hourly means, from the use of the approximate formula, are small, the greatest error is probably under 0·003 in. The errors of the daily means will be due chiefly to the want of the three two-hourly observations.

The Annual Variation of the Pressure of Aqueous Vapour follows the same march as the temperature of the air. The greatest monthly mean is that for August, and the least that for February; the former being 0·409 in., the latter being 0·184 in., and the annual range of the monthly means 0·225 in. The means for the mean meteorological seasons, and the meteorological seasons *for the year* 1843, are—

		in.		in.
Spring,	Mar., Apr., May,	0·252	Apr., May, June,	0·285
Summer,	June, July, Aug.,	0·372	July, Aug., Sept.,	0·393
Autumn,	Sept., Oct., Nov.,	0·288	Oct., Nov., Dec.,	0·254
Winter,	Dec., Jan., Feb.,	0·228	Jan., Feb., Mar.,	0·209

The year 1843, 0·283 inch.

TABLE X.—Pressure of Aqueous Vapour, considered in relation to the Moon's Age and Declination.

Moon's Age.	No. of Daily Means.	Mean Pressure.	Moon's Age.	No. of Daily Means.	Mean Pressure.	After Moon farthest North.	No. of Daily Means.	Mean Pressure.	After Moon farthest North.	No. of Daily Means.	Mean Pressure.
Day.		in.	Day.		in.	Day.		in.	Day.		in.
15	9	0·299	0	12	0·278	0	11	0·257	14	11	0·293
16	11	·290	1	10	·284	1	12	·255	15	12	·285
17	10	·292	2	11	·274	2	9	·322	16	9	·333
18	11	·311	3	9	·253	3	11	·276	17	11	·309
19	10	·279	4	11	·280	4	12	·271	18	12	·298
20	9	·315	5	10	·277	5	11	·273	19	11	·282
21	12	·298	6	9	·305	6	12	·259	20	12	·288
22	9	·324	7	12	·295	7	11	·272	21	11	·262
23	11	·295	8	10	·310	8	12	·267	22	12	·305
24	10	·284	9	11	·277	9	9	·321	23	9	·341
25	11	·285	10	9	·281	10	11	·292	24	11	·317
26	10	·278	11	11	·284	11	12	·303	25	12	·302
27	9	·297	12	10	·293	12	11	·302	26	11	·278
28	11	·301	13	9	·303	13	12	·292	27	11	·262
29	9	·303	14	12	·285						

This Table has been formed from Table IX. in the manner already indicated, Table II. of the Abstracts of the Magnetical Observations, excepting that no means for the Sundays were employed.

Pressure of Aqueous Vapour with reference to the Moon's Age.—From the above, and the following means of groups, there seems to be a maximum of pressure about three days after the time of full moon, and a minimum about three days after the time of new moon.

	in.		in.
12 days till 18 days, Full Moon,	0·296	27 days till 3 days, New Moon,	0·284
15 …… 22 …	0·301	0 …… 7 …	0·281
19 …… 26 …	0·295	4 …… 11 …	0·289
23 …… 29 …	0·292	8 …… 14 …	0·290

Pressure of Aqueous Vapour with reference to the Moon's Declination.—The means in the above Table seem very irregular. The projected quantities shew four maximum peaks, which occur at intervals of seven days, namely, on the 2d, 9th, 16th, and 23d days after the Moon has its greatest north declination; but these may be at once traced to the less number of observations from which the means are deduced for these days, and this due to the want of means for the Sundays. The means of groups are as follow:—

	in.		in.
25 days till 3 days, Moon farthest North,	0·279	11 days till 17 days, Moon farthest South,	0·302
0 …… 6 …	0·273	14 …… 20 …	0·298
4 …… 10 …	0·279	18 …… 24 …	0·299
7 …… 13 …	0·293	21 …… 27 …	0·295

These means shew the minimum about three days after the Moon has its greatest north declination, and the maximum about three days after it has its greatest south declination.

Extreme Daily Mean Pressures of Aqueous Vapour and the Ranges.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
Greatest,	0·342	0·259	0·304	0·322	0·359	0·365	0·489	0·541	0·529	0·417	0·311	0·331
Least,	0·154	0·107	0·157	0·150	0·217	0·253	0·308	0·320	0·229	0·167	0·174	0·191
Range,	0·188	0·152	0·147	0·172	0·142	0·112	0·181	0·221	0·300	0·250	0·137	0·140

The greatest daily mean in the year is that for August 17, being . . 0·541 in.
The least …………………………………… February 18, being . . 0·107 …
The greatest range of the daily means in any month is that for September, being 0·300 …
The least ……………………………………………………… June, being 0·112 …
The range of the daily means for the whole year 1843, is . . . 0·434 …

TABLE XI.—Hourly Means of the Pressure of Aqueous Vapour for each Month, as deduced from Tables III. and VIII., with the Means for the Quarters and Year 1843.

Period.	18^h.	20^h.	22^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.	Mean.	Range.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
January	0·212	0·213	0·210	0·214	0·219	0·221	0·222	0·211	0·208	0·213	0·014
February	·178	·177	·176	·180	·184	·185	·183	·179	·183	·180	·009
March	·201	·207	·221	·236	·239	·235	·231	·223	·218	·220	·038
April	·231	·248	·263	·260	·265	·261	·259	·256	·244	·250	·034
May	·264	·280	·287	·292	·289	·293	·285	·284	·279	·281	·029
June	·308	·317	·321	·322	·336	·332	·333	·318	·312	·319	·028
July	·364	·393	·398	·404	·407	·395	·403	·392	·378	·387	·043
August	·355	·392	·423	·444	·443	·435	·437	·433	·415	·411	·089
September	·324	·360	·396	·414	·417	·405	·414	·402	·380	·381	·093
October	·233	·241	·251	·264	·258	·259	·252	·243	·237	·245	·031
November	·230	·235	·239	·242	·249	·239	·232	·232	·229	·235	·020
December	·273	·273	·275	·288	·289	·285	·277	·273	·273	·277	·016
Spring	·232	·245	·257	·263	·264	·263	·258	·254	·247	·250	·032
Summer	·342	·367	·381	·390	·395	·387	·391	·381	·368	·372	·053
Autumn	·262	·279	·295	·307	·308	·301	·299	·292	·282	·287	·046
Winter	·221	·221	·221	·228	·231	·230	·228	·221	·222	·227	·010
The Year	·264	·278	·288	·296	·299	·295	·294	·287	·279	·283	·035

The previous Table has been formed from Tables III. and VIII. by means of the formula given after Table IX.

The Diurnal Variation of the Pressure of Aqueous Vapour also follows somewhat nearly the march of temperature of the air; there are, however, some apparent irregularities in the progression of the former that neither appear in the latter nor in that of the temperature of evaporation. In January, the maximum of pressure occurs about 4 P.M., in February, about 3 P.M., while, in the other months, it occurs nearer 1 P.M. than any other hour. In some of the months there are one or more secondary minima; some of these are so marked as to render it probable that they are not accidental. In the month of April, a secondary minimum occurs about 11 A.M.; in May and October, about 1 P.M.; and in June, July, August, and September, about 3 P.M.; the maxima occurring about two hours before and after the minima. The minima are most distinctly marked in July, August, and September. The occurrence of minima, as here indicated, is, perhaps, what might have been expected from the non-coincidence of the periods of maxima for the temperature of the air and the temperature of evaporation. Thus, taking the most marked case, the month of August, the temperature of the air and the temperature of evaporation go on increasing together till a little after 1 P.M.; the temperature of evaporation then commences falling; the temperature of the air, however, increases for nearly three-quarters of an hour after this. The increasing pressure of aqueous vapour will, therefore, evidently receive a sudden check at the time of the maximum temperature of evaporation, and it will diminish rapidly while the temperature of the air and of evaporation are moving in opposite directions. When, however, the temperature of the air commences falling also, the pressure of vapour will diminish less rapidly, until the falling temperature of the air makes up for its lost time and gains ground on the falling temperature of evaporation, thus producing a second maximum of pressure; after this they diminish together, according to nearly the same law as they increased in the morning. The occurrence of the maximum temperature of evaporation later than that of the air will evidently produce a minimum before the temperature of evaporation attains its maximum.*

---

* The afternoon secondary maximum and minimum seemed to me, at first, due to a local cause, namely, the action of the sun on the soil near the thermometers when it approaches the prime vertical, producing in this way an abnormal state of the atmosphere near the thermometers. I have, however, been induced to reject this hypothesis for the following reasons:—With a similar amount of sunshine, a similar action should be visible in the morning, but there is none visible; the effect should be most distinct near midsummer, whereas it is most evident in August and September; it should be as well marked in March, April, and May, but it is not evident at all in these months. The comparative amounts of sunshine for the year 1843 can only be estimated from the observed surface of cloud, and this differs little before 7 A.M. and after 5 P.M., but it is evident that the quantity of vapour may be connected with the surface of cloud by other than local considerations, as will be seen on examination of the tables for the surface of cloud. Finally, the minimum occurs at 1^h P.M. in May and October, and at 11^h A.M. in April, when the cause supposed could not operate.

The periods of maxima for the four meteorological seasons are as follow :—

Spring, 1^{h} 10^{m} P.M. Makerstoun mean time.
Summer, 1^{h} 0^{m} P.M. ……………………
Autumn, 0^{h} 45^{m} P.M. ……………………
Winter, 1^{h} 30^{m} P.M. ……………………

The Year, 1^{h} 0^{m} P.M. ……………………

A secondary minimum occurs in Summer at 3^{h} 40^{m} P.M., and a secondary maximum about 5^{h} P.M. There is a marked inflection in the curve for Autumn at 3^{h} 10^{m} P.M. In the mean for the whole year, the secondary minimum probably occurs about 4^{h} P.M., the secondary maximum about 5^{h} P.M.

The periods of maxima and minima for the four astronomical seasons are—

Spring, principal max., 1^{h} 40^{m} P.M.
Summer, …………… 1^{h} 20^{m} P.M. Secondary min., 4^{h} 10^{m} P.M. Secondary max., 5^{h} 0^{m} P.M.
Autumn, …………… 0^{h} 0^{m} Noon. …………… 3^{h} 40^{m} P.M. …………… 5^{h} 10^{m} P.M.
Winter, …………… 1^{h} 10^{m} P.M.

The mean pressure of aqueous vapour for the year occurs at 8^{h} 10^{m} A.M.
…………………………………………………………… 8^{h} 10^{m} P.M.
The interval between the periods is, ... 12^{h} 0^{m}.

Range of the Diurnal Variation of the Pressure of Aqueous Vapour.—The range is inexact for the summer months; it is here, however, as evident, as in the previous cases of temperature, that the range is less in the summer months than in the months immediately preceding and succeeding. The greatest range is that for September, being about 0·100 inch.

TABLE XII.—Mean Relative Humidity for each Civil Day, Week, and Month of 1843, Saturation being = 1.

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	[……]	0·819	0·835	0·880	0·772	0·973	0·792	0·884	0·893	[0·825]	0·946	0·965
2	0·766	·803	·819	[·854]	·850	·944	[·779]	·861	·874	·763	·971	·937
3	·914	·922	·769	·795	·829	·883	·775	·847	[·821]	·842	·987	[·890]
4	·749	·801	·844	·891	·753	[·891]	·709	·867	·714	·848	·860	·889
5	·718	[·884]	[·831]	·827	·726	·872	·935	·759	·790	·821	[·882]	·820
6	·894	·868	·881	·851	·765	·875	·815	[·851]	·841	·876	·841	·759
7	·843	·923	·827	·845	[·786]	·797	·812	·894	·779	·831	·856	·859
8	[·847]	·985	·849	·841	·821	·778	·857	·952	·790	[·899]	·776	·798
9	·911	·852	·848	[·788]	·822	·811	[·814]	·790	·804	·911	·849	·956
10	·859	·798	·929	·698	·831	·745	·770	·802	[·857]	·975	·992	[·883]
11	·857	·753	·918	·716	·784	[·827]	·742	·854	·956	·978	·927	·896
12	·928	[·828]	[·861]	·776	·807	·848	·887	·880	·946	·774	[·920]	·906
13	·935	·869	·792	·733	·877	·920	·864	[·870]	·867	·784	·931	·884
14	·796	·854	·831	·754	[·852]	·859	·814	·812	·881	·807	·895	·836
15	[·883]	·845	·847	·801	·893	·733	·758	·939	·878	[·828]	·929	·823
16	·814	·877	·896	[·765]	·939	·697	[·835]	·935	·865	·819	·902	·828
17	·898	·917	·896	·768	·814	·818	·879	·926	[·877]	·912	·881	[·864]
18	·930	·870	·887	·778	·786	[·764]	·844	·839	·895	·874	·900	·931
19	·930	[·893]	[·881]	·758	·731	·863	·854	·804	·859	·831	[·898]	·878
20	·915	·749	·892	·802	·772	·731	·864	[·842]	·883	·872	·918	·887
21	·888	·969	·896	·779	[·865]	·744	·769	·787	·798	·839	·951	·952
22	[·894]	·979	·817	·913	·974	·676	·892	·890	·860	[·844]	·839	·856
23	·900	·970	·881	[·801]	·991	·768	[·825]	·808	·856	·787	·978	·871
24	·873	·933	·922	·739	·939	·791	·710	·809	[·791]	·872	·964	[·899]
25	·861	·907	·814	·784	·935	[·755]	·826	·811	·822	·863	·974	·904
26	·827	[·890]	[·845]	·787	·913	·797	·889	·907	·654	·840	[·897]	·891
27	·881	·826	·875	·753	·872	·785	·756	[·834]	·757	·845	·864	·921
28	·687	·867	·757	·877	[·891]	·715	·875	·910	·764	·923	·831	·909
29	[·798]		·822	·864	·834	·729	·838	·763	·856	[·904]	·769	·845
30	·687		·875	[·824]	·822	·732	[·833]	·806	·880	·930	·973	·832
31	·885		·854		·972		·782	·812		·938		[·886]
Mean	0·852	0·873	0·855	0·800	0·845	0·803	0·820	0·850	0·837	0·860	0·904	0·878

Table XII. has been formed in the following manner :—f being the elastic force of vapour, the air being saturated at the mean temperature t (Table I.), and f'' the elastic force of the vapour actually in the air (Table IX.), then h, the relative humidity in the previous table, is obtained from the formula,

$$h = \frac{f''}{f}$$

The values of f were obtained from the tables in the Introduction to the Greenwich Observations, 1842.

Annual Variation of Humidity.—This has not the same period as the temperature of the air or the pressure of aqueous vapour; the minimum occurs in June, and the maximum in Winter; in the beginning of the year February is a maximum, and in the end of the year November is *the* maximum. The following are the means for three different classes of seasons, viz. :—

The mean meteorological seasons, for which June, July, and August, constitute summer.
The meteorological seasons for the year 1843, for which July, August, September, constitute summer.
The astronomical seasons, for which May, June, July, constitute summer.

Seasons.	Mean Meteorological.	Meteorological for 1843.	Astronomical.
Spring, . .	0·833	0·816	0·843
Summer, . .	0·824	0·836	0·823
Autumn, . .	0·867	0·881	0·849
Winter, . .	0·868	0·860	0·878
The year 1843, . .		0·848.	

For the year 1843, the most regular group is that of the astronomical seasons. The greatest range of the means is that for the meteorological seasons of 1843, being 0·065 ; that for the astronomical group being 0·055, and that for the *mean* meteorological seasons being 0·044. The range of the monthly means is 0·104.

Extremes of the Daily Means, and the Ranges for each Month.

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Greatest,	0·935	0·985	0·929	0·913	0·991	0·973	0·935	0·952	0·956	0·978	0·992	0·965
Least,	0·687	0·749	0·757	0·698	0·726	0·676	0·709	0·759	0·654	0·763	0·769	0·759
Range,	0·248	0·236	0·172	0·215	0·265	0·297	0·226	0·193	0·302	0·215	0·223	0·206

November 10th was the most humid day, and September 26th the least humid day in the year, the ratio to saturation for the former being 0·992, and for the latter 0·654. The total range of the daily means for the year 1843 is therefore 0·338. The greatest monthly range of the daily means is that for September, being 0·302, and least monthly range is that for March, being 0·172.

TABLE XIII.—Relative Humidity, Saturation being = 1, with reference to the Moon's Age and Declination.

Moon's Age.	No. of daily Means.	Humidity.	Moon's Age.	No. of daily Means.	Humidity.	After Moon farthest North.	No. of daily Means.	Humidity.	After Moon farthest North.	No. of daily Means.	Humidity.
15	9	0·843	0	12	0·833	0	11	0·852	14	11	0·884
16	11	·854	1	10	·844	1	12	·829	15	12	·842
17	10	·873	2	11	·847	2	9	·863	16	9	·819
18	11	·870	3	9	·841	3	11	·839	17	11	·817
19	10	·858	4	11	·846	4	12	·848	18	12	·844
20	9	·853	5	10	·848	5	11	·835	19	11	·816
21	12	·849	6	9	·830	6	12	·857	20	12	·874
22	9	·855	7	12	·850	7	11	·856	21	11	·877
23	11	·880	8	10	·872	8	12	·831	22	12	·849
24	10	·862	9	11	·860	9	9	·826	23	9	·872
25	11	·851	10	9	·853	10	11	·810	24	11	·879
26	10	·862	11	11	·852	11	12	·861	25	12	·863
27	9	·829	12	10	·819	12	11	·860	26	11	·849
28	11	·899	13	9	·823	13	12	·861	27	11	·837
29	9	·862	14	12	·831						

This Table has been formed from Table XII. in the manner already referred to, Table X.

Humidity with reference to the Moon's Age.—The following means of groups indicate a minimum of humidity about four days before full Moon, and a maximum about four days before new Moon.

12 days till 18 days, Full Moon,	0·845	27 days till 3 days, New Moon,	0·851
15 ...... 22 ...	0·857	0 ...... 7 ...	0·842
19 ...... 26 ...	0·859	4 ...... 11 ...	0·851
23 ...... 29 ...	0·864	8 ...... 14 ...	0·844

Humidity with reference to the Moon's Declination.—The following means of groups indicate a maximum of humidity about four days before the Moon attains its greatest north declination, and a minimum about four days before it attains its greatest south declination.

25 days till 3 days, Moon farthest North,	0·847	11 days till 17 days, Moon farthest South,	0·849
0 ...... 6 ...	0·846	14 ...... 20 ...	0·842
4 ...... 10 ...	0·838	18 ...... 24 ...	0·857
7 ...... 13 ...	0·844	21 ...... 27 ...	0·861

TABLE XIV.—Hourly Means of the Relative Humidity for each Month and Quarter in 1843, Saturation being = 1.

Period.	18^{h}.	20^{h}.	22^{h}.	0^{h}.	2^{h}.	4^{h}.	6^{h}.	8^{h}.	10^{h}.	Mean.	Range.
January	0·858	0·869	0·850	0·814	0·811	0·837	0·860	0·841	0·842	0·844	0·058
February	·899	·889	·863	·815	·811	·830	·876	·891	·920	·877	·109
March	·914	·908	·860	·803	·766	·758	·813	·881	·886	·857	·156
April	·895	·855	·774	·708	·692	·694	·757	·839	·850	·807	·203
May	·930	·883	·811	·766	·735	·759	·768	·840	·903	·845	·195
June	·873	·821	·766	·727	·737	·720	·740	·768	·857	·800	·153
July	·908	·849	·768	·740	·718	·723	·779	·838	·881	·824	·190
August	·947	·907	·823	·764	·720	·711	·775	·887	·930	·857	·236
September	·936	·933	·850	·746	·693	·676	·771	·893	·931	·852	·260
October	·910	·916	·837	·783	·746	·766	·848	·890	·891	·857	·170
November	·927	·929	·909	·846	·838	·845	·906	·924	·923	·902	·091
December	·886	·886	·844	·860	·848	·866	·877	·875	·881	·873	·042
Spring	·913	·882	·815	·759	·731	·737	·779	·853	·880	·836	·182
Summer	·909	·859	·786	·744	·725	·718	·765	·831	·889	·827	·191
Autumn	·924	·926	·865	·792	·759	·762	·842	·902	·915	·870	·167
Winter	·881	·881	·852	·830	·823	·844	·871	·869	·881	·865	·058
The Year	·907	·887	·830	·781	·760	·765	·814	·864	·891	·850	·147

Table XIV. has been formed from Tables III. and VIII. by means of the formula given after Table XII.

Diurnal Variation of the Relative Humidity.—The maximum humidity occurs between 9 P.M. and 5 A.M. The minimum occurs as early as 10^{h} 30^{m} A.M. in December, and as late as 2^{h} 30^{m} in March and September. The progression is regular in each month, with the exceptions of June and December; a secondary maximum occurs in the former at 1^{h} 10^{m} P.M., and in the latter at 11^{h} 10^{m} A.M., the minima occurring two hours before and after. The following are the periods of minima for the four meteorological seasons, and also for the four astronomical seasons:—

Meteorological Seasons.	Astronomical Seasons.
Spring, 1^{h} 40^{m} P.M.	Spring, 2^{h} 0^{m} P.M. Makerstoun mean time.
Summer, 2^{h} 30^{m} P.M.	Summer, 1^{h} 25^{m} P.M. ....
Autumn, 2^{h} 10^{m} P.M.	Autumn, 2^{h} 20^{m} P.M. ....
Winter, 0^{h} 30^{m} P.M.	Winter, 0^{h} 50^{m} P.M. ....

The year, 1^{h} 50^{m}.

From the periods for the four astronomical seasons, it is evident that the minimum humidity occurs earlier in Summer than in the preceding and succeeding quarters. For the astronomical seasons, the minimum humidity occurs after the maximum temperature of the air in Spring and Autumn, while it occurs before the maximum temperature in Summer and Winter. In the mean for the year, the minimum humidity occurs about 20^m after the maximum temperature, and about 50^m after the maximum pressure of aqueous vapour. The secondary maxima and minima, shewn in some of the monthly means for the pressure of aqueous vapour, have no counterparts in the means for the humidity.

The ascending or forenoon branches of the diurnal curves of temperature and pressure of aqueous vapour exhibit more rapid changes than the afternoon or descending branch; while, for the humidity, the afternoon or ascending branch has the most rapid variations. In the mean for the year, however, the variation is but slightly more rapid in the afternoon than in the forenoon branch. These remarks have reference to the portion of the diurnal curve included in the limits of the observations for 1843, viz., 5 A.M. till 9 P.M.

The mean humidity for the year occurs at 8^h 28^m A.M.
………………………………………… 6^h 40^m P.M.

The interval between these periods is, 10^h 12^m

Diurnal Range of Humidity.—The diurnal ranges, as far as can be judged from Table XIV., are somewhat less in the summer months than in the months immediately preceding or succeeding them.

TABLE XV.—Daily, Weekly, and Monthly Means of the Height of the Barometer in 1843.

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1	[·······]	29·256	29·630	29·026	30·184	29·335	29·558	29·505	30·059	[29·677]	29·515	29·903
2	29·901	29·093	29·881	[29·243]	30·070	29·055	[29·530]	29·264	30·078	29·700	29·645	29·894
3	29·880	28·914	30·015	29·369	29·717	26·189	29·471	29·130	[30·060]	29·780	29·358	[29·834]
4	29·460	29·469	30·108	29·185	29·399	[29·400]	29·661	29·190	30·075	29·767	29·328	29·945
5	29·603	[29·559]	[30·008]	29·382	29·270	29·682	29·458	29·424	30·146	29·684	[29·385]	29·545
6	29·713	29·856	29·929	29·318	29·272	29·693	29·379	[29·545]	30·046	29·204	29·424	29·810
7	29·292	30·026	29·991	29·050	[29·544]	29·449	29·579	29·826	30·042	29·056	29·232	29·678
8	[29·108]	29·997	30·125	29·132	29·585	28·848	29·695	29·838	30·032	[29·295]	29·325	29·868
9	28·967	29·987	30·098	[29·429]	29·756	28·838	[29·734]	29·865	29·962	29·337	29·585	29·995
10	28·443	29·978	29·806	29·678	29·982	29·429	29·864	29·926	[29·997]	29·537	29·323	[29·943]
11	28·632	30·007	29·847	29·763	29·976	[29·502]	29·999	29·993	29·823	28·952	29·838	29·950
12	28·669	[29·757]	[29·623]	29·631	29·796	29·983	29·891	30·022	30·111	29·060	[29·770]	30·119
13	28·022	29·777	29·218	29·693	29·498	29·956	29·841	[29·920]	30·011	29·290	29·957	30·047
14	28·389	29·550	29·196	29·473	[29·614]	29·961	29·805	29·886	29·788	29·544	30·080	29·953
15	[29·049]	29·242	29·572	28·745	29·401	29·975	29·739	29·830	29·746	[29·409]	29·836	29·845
16	29·453	29·107	29·722	[29·693]	29·397	29·916	[29·699]	29·861	29·781	29·368	29·800	30·054
17	29·777	29·420	29·520	29·778	29·618	29·884	29·848	29·890	[29·837]	29·371	29·384	[30·027]
18	29·985	29·550	29·665	29·791	29·830	[29·877]	29·506	29·875	29·818	29·824	29·073	30·187
19	30·169	[29·340]	[29·473]	29·679	29·856	29·839	29·454	29·649	30·044	30·105	[29·226]	30·134
20	30·014	29·327	29·550	29·519	29·749	29·911	29·317	[29·567]	29·844	29·803	29·094	29·992
21	29·730	29·325	29·219	29·561	[29·690]	29·738	29·360	29·597	29·924	29·602	29·042	30·036
22	[29·725]	29·310	29·163	29·548	29·555	29·809	29·362	29·137	30·238	[29·564]	28·963	29·784
23	29·535	29·390	29·250	[29·495]	29·601	29·852	[29·601]	29·255	30·323	29·503	29·192	29·934
24	29·365	29·551	29·594	29·775	29·549	29·862	29·793	29·502	[30·015]	29·240	29·343	[30·019]
25	29·538	29·570	29·860	29·270	29·320	[29·736]	29·938	29·520	30·100	29·129	29·395	30·136
26	29·616	[29·397]	[29·683]	29·298	29·243	29·742	29·839	29·625	29·900	29·257	[29·438]	30·102
27	29·372	29·027	29·800	29·580	29·141	29·627	29·725	[29·633]	29·603	29·280	29·087	30·121
28	29·260	29·216	29·774	29·390	[29·456]	29·525	29·678	29·530	29·638	28·586	29·643	30·180
29	[29·340]		29·822	29·565	29·710	29·525	29·237	29·688	29·679	[29·192]	29·967	30·064
30	29·218		29·436	[29·751]	29·776	29·506	[29·495]	29·931	29·500	29·256	29·909	29·769
31	28·316		29·063		29·546		29·564	29·956		29·259		[29·683]
Mean	29·358	29·498	29·661	29·488	29·622	29·620	29·637	29·656	29·935	29·404	29·475	29·963

The daily means in this Table have been obtained from the nine daily observations in the following manner:—If S be the sum of the nine observations from 18^h till 10^h, 18 be the height at 18^h, 10_p the height at 10^h preceding the 18^h, and 10_s the height at 10^h succeeding the 18^h, then the daily means for the Mondays were obtained from the formula,

$$\frac{2 \times 18 + S + 10_s}{12}$$

and for the other days of the week from the formula,

$$\frac{10_p + 18 + S + 10_s}{12}$$

It was found, from other observations, that means thus obtained differed very little from the truth.

Annual Variation of Atmospheric Pressure.—The lowest monthly mean pressure is that for January, being 29·358 in.; the highest monthly mean pressure is that for December, being 29·963 in.; the range of the monthly means is therefore 0·605 in. The following are the mean pressures for three different classes of seasons, viz.:—

The mean meteorological seasons, for which June, July, and August constitute summer.
The meteorological seasons of 1843, for which July, August, and September constitute summer.
The astronomical seasons, for which May, June, and July constitute summer.

Seasons.	Mean Meteorological.	Meteorological for 1843.	Astronomical.
	in.	in.	in.
Spring, . .	29·590	29·577	29·549
Summer, . .	·638	·743	·626
Autumn, . .	·605	·614	·665
Winter, . .	·606	·506	·599
Range of Means, .	0·048	0·237	0·116

The second group is the most marked; it indicates the maximum pressure in the warmest quarter of 1843, and the minimum in the coldest quarter.

The mean pressure for the year = 29·610 in.

TABLE XVI.—Height of the Barometer, with reference to the Moon's Age and Declination for 1843.

Moon's Age.	Number of Days.	Height of Barometer.	Moon's Age.	Number of Days.	Height of Barometer.	After Moon farthest North.	Number of Days.	Height of Barometer.	After Moon farthest North.	Number of Days.	Height of Barometer.
Days.		in.	Days.		in.	Days.		in.	Days.		in.
15	9	29·732	0	12	29·611	0	11	29·558	14	11	29·566
16	11	·593	1	10	·485	1	12	·587	15	12	·599
17	10	·653	2	11	·559	2	9	·561	16	9	·859
18	11	·702	3	9	·572	3	11	·516	17	11	·585
19	10	·751	4	11	·480	4	12	·582	18	12	·712
20	9	·723	5	10	·493	5	11	·687	19	11	·770
21	12	·674	6	9	·580	6	12	·744	20	12	·694
22	9	·698	7	12	·640	7	11	·743	21	11	·593
23	11	·582	8	10	·688	8	12	·600	22	12	·667
24	10	·622	9	11	·606	9	9	·641	23	9	·561
25	11	·685	10	9	·713	10	11	·483	24	11	·685
26	10	·560	11	11	·671	11	12	·492	25	12	·532
27	9	·628	12	10	·672	12	11	·514	26	11	·646
28	11	·553	13	9	·664	13	12	·580	27	11	·688
29	9	·623	14	12	·658						

This Table has been formed from Table XV. in the manner already referred to, Table X.

Atmospheric Pressure with reference to the Moon's Age.—From the means in the Table, and the following means of groups, it is distinctly evident that a maximum of pressure occurs about two days after full Moon, and a minimum of pressure about two days after new Moon; the same result has been obtained, Table X., for that portion of the atmospheric pressure due to the aqueous vapour.

12 days till	18 days, Full Moon,	29·668	27 days till	3 days, New Moon,	29·576
15	22 ...	·691	0	7 ...	·552
19	26 ...	·662	4	11 ...	·609
23	29 ...	·608	8	14 ...	·668

Atmospheric Pressure with reference to the Moon's Declination.—The means in the previous Table, and in the following means of groups, indicate two maxima and two minima. The principal maximum occurs about two days before the Moon is on the equator moving northwards; the two minima are nearly equal, the one occurring when the Moon is farthest north, the other about two days before it is farthest south; the secondary maximum occurs about one day before the Moon is on the equator moving southwards.

25 days till	3 days, Moon farthest North,	29·584	11 days till	17 days, Moon farthest South,	29·599
0	6 ...	·605	14	20 ...	·684
4	10 ...	·640	18	24 ...	·669
7	13 ...	·579	21	27 ...	·625

TABLE XVII.—Diurnal Range of the Barometer for each Civil Day, with the Weekly and Monthly Means for 1843.

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1	[.....]	0·238	0·326	0·149	0·047	0·325	0·125	0·133	0·153	[0·122]	0·260	0·202
2	0·060	·123	·195	[·311]	·209	·215	[·158]	·323	·049	·171	·083	·158
3	·558	·318	·146	·207	·400	·426	·278	·062	[·105]	·036	·360	[·308]
4	·121	·660	·066	·269	·290	[·248]	·103	·143	·212	·032	·455	·481
5	·392	[·250]	[·108]	·434	·068	·035	·332	·180	·112	·185	[·359]	·221
6	·396	·153	·060	·410	·123	·047	·274	[·111]	·070	·544	·444	·343
7	·404	·173	·128	·194	[·167]	·442	·062	·139	·029	·081	·388	·396
8	[0·452]	·073	·053	·434	·157	·509	·194	·084	·057	[·349]	·426	·309
9	1·044	·052	·123	[·251]	·183	·460	[·161]	·059	·102	·406	·350	·077
10	0·329	·049	·299	·081	·182	·597	·141	·091	[·160]	·239	·368	[·200]
11	·146	·052	·152	·058	·131	[·281]	·121	·034	·412	·640	·456	·229
12	·129	[·163]	[·232]	·330	·291	·021	·173	·041	·142	·472	[·326]	·108
13	·858	·287	·133	·206	·178	·053	·025	[·062]	·221	·106	·104	·079
14	·570	·159	·324	·334	[·167]	·045	·076	·075	·157	·250	·152	·232
15	[·444]	·381	·364	·153	·033	·051	·159	·082	·065	[·313]	·527	·214
16	·713	·147	·249	[·167]	·071	·074	[·200]	·052	·086	·244	·203	·154
17	·087	·337	·103	·088	·297	·083	·519	·053	[·165]	·363	·526	[·160]
18	·310	·049	·206	·089	·127	[·098]	·304	·102	·318	·443	·129	·044
19	·074	[·120]	[·226]	·130	·052	·122	·117	·302	·152	·139	[·374]	·110
20	·267	·054	·448	·156	·130	·088	·285	[·267]	·215	·472	·284	·207
21	·247	·063	·230	·076	[·092]	·168	·271	·510	·292	·283	·445	·218
22	[·210]	·069	·122	·130	·060	·096	·295	·367	·219	[·243]	·655	·436
23	·348	·138	·278	[·266]	·044	·048	[·211]	·269	·083	·283	·175	·286
24	·118	·129	·275	·509	·141	·037	·197	·184	[·205]	·249	·276	[·204]
25	·204	·047	·232	·509	·196	[·086]	·044	·087	·133	·030	·121	·112
26	·153	[·200]	[·170]	·214	·155	·120	·175	·152	·342	·226	[·364]	·059
27	·297	·132	·063	·203	·073	·128	·046	[·222]	·162	·228	·619	·113
28	·285	·427	·091	·180	[·142]	·085	·256	·333	·119	·724	·482	·048
29	[·294]		·081	·332	·122	·062	·383	·464	·194	[·332]	·509	·156
30	·395		·669	[·228]	·088	·046	[·205]	·115	·183	·274	·446	·385
31	·397		·139		·218		·092	·037		·283		[·175]
Mean	0·342	0·180	0·206	0·235	0·151	0·169	0·194	0·166	0·165	0·285	0·355	0·207

The diurnal ranges have been obtained, in the first week in January, by taking the differences of the highest and lowest readings included between the first observation on the civil day and the first observation of the next civil day; the range for the 7th (Saturday) was obtained by including the last observation on the 6th. For the remainder of the year, the range for Mondays was obtained by including the first observations of Tuesday, and the range for the other days of the week by including the last observations of the previous days.

Mean of the Diurnal Ranges of the Atmospheric Pressure.—The diurnal ranges are least in May, the mean for that month being 0·151 in., and greatest in November, the mean being 0·355 in. The following are means for the three classes of groups, namely,

The mean meteorological seasons, for which June, July, and August constitute summer.
The meteorological seasons for the year 1843, for which July, August, and September constitute summer.
The astronomical seasons, for which May, June, and July constitute summer.

Seasons.	Mean Meteorological.	Meteorological for 1843.	Astronomical.
	in.	in.	in.
Spring, . .	0·197	0·185	0·207
Summer, . .	·176	·175	·171
Autumn, . .	·268	·282	·205
Winter, . .	·243	·243	·301
Range of Means, .	0·092	0·107	0·130

The diurnal ranges are least for Summer of all the groups, and greatest for Autumn in the two meteorological groups, but greatest for Winter of the astronomical group. The latter group seems the most distinct, the difference of the means is also greatest for it.

The mean of all the diurnal ranges for the year 1843 = 0·221 inch.

TABLE XVIII.—Hourly Means of the Height of the Barometer for each Month and Quarter of 1843.

Period.	18^{h}.	20^{h}.	22^{h}.	0^{h}.	2^{h}.	4^{h}.	6^{h}.	8^{h}.	10^{h}.	Mean Pressure.	Range.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
January	29·333	29·353	29·363	29·365	29·353	29·357	29·358	29·367	29·374	29·357	0·041
February	·474	·482	·501	·511	·498	·493	·501	·515	·520	·499	·046
March	·647	·662	·669	·670	·662	·656	·658	·670	·672	·662	·025
April	·480	·484	·486	·484	·477	·472	·477	·494	·507	·487	·035
May	·633	·636	·634	·628	·619	·606	·598	·607	·610	·620	·038
June	·614	·621	·624	·627	·624	·616	·608	·613	·622	·619	·019
July	·641	·641	·641	·642	·633	·629	·622	·627	·632	·635	·020
August	·662	·669	·668	·660	·652	·641	·635	·645	·657	·656	·034
September	·926	·941	·949	·944	·933	·926	·926	·935	·941	·935	·023
October	·402	·414	·419	·415	·407	·394	·389	·391	·391	·401	·030
November	·431	·441	·460	·470	·476	·481	·493	·499	·503	·471	·072
December	·962	·962	·975	·977	·959	·953	·956	·957	·961	·962	·024
Spring	·587	·594	·596	·594	·586	·578	·578	·590	·596	·590	·018
Summer	·639	·644	·644	·643	·636	·629	·622	·628	·637	·637	·022
Autumn	·586	·599	·609	·610	·605	·600	·603	·608	·612	·602	·026
Winter	·590	·599	·613	·618	·603	·601	·605	·613	·618	·606	·028
The Year	·600	·609	·616	·616	·608	·602	·602	·610	·616	·609	·016

The observations in the first week of January were not made use of in obtaining the hourly means for that month; no observations having been made at 18^h in the second week, a correction was applied to the mean for that hour of $-0{\cdot}327$ in., obtained from Table XV. as follows:—

{Mean pressure, Jan. 9—31, = 29·271 in. *minus* mean pressure, Jan. 16—31, = 29·598 in.} = − 0·327 in.

The means were afterwards corrected by + 0·090 in., in order to render the mean for the month from these means equal to that obtained, Table XV., from all the daily means.

Diurnal Variation of the Atmospheric Pressure.—The means for the majority of the months indicate the existence of two maxima and two minima; the periods of only one maximum and one minimum can be determined from the nine observations. The means for the month of November present the greatest departure from the usual diurnal variation; in that month the pressure increases continuously from 5 A.M. till 9 P.M. The following are the periods of the maximum and minimum, included in the observations from 5 A.M. till 9 P.M., for the mean meteorological and astronomical seasons.

	Mean Meteorological Seasons.		Astronomical Seasons.	
	Maximum.	Minimum.	Maximum.	Minimum.
Spring, . .	$9^h\ 10^m$ A.M.	$4^h\ 10^m$ P.M.	$10^h\ 40^m$ A.M.	$3^h\ 30^m$ P.M.
Summer, . .	$9^h\ 0^m$ A.M.	$5^h\ 10^m$ P.M.	$9^h\ 0^m$ A.M.	$5^h\ 0^m$ P.M.
Autumn, . .	$10^h\ 20^m$ A.M.	$3^h\ 20^m$ P.M.	$8^h\ 40^m$ A.M.	$4^h\ 50^m$ P.M.
Winter, . .	$10^h\ 50^m$ A.M.	$2^h\ 40^m$ P.M.	$10^h\ 40^m$ A.M.	$2^h\ 0^m$ P.M.

The maximum seems to occur earliest in the warmest quarter, and the minimum latest in the same quarter; the maximum also occurs latest in the coldest quarter, and the minimum earliest in the same quarter. In the meteorological group, the principal maximum occurs at or after $9^h\ 10^m$ P.M. for Spring, Autumn, and Winter, and the principal minimum occurs at or before $5^h\ 10^m$ A.M. in Autumn and Winter.

In the mean for the year,

The principal minimum occurs at or before $5^h\ 10^m$ A.M. Makerstoun mean time.
A maximum occurs at . . . $10^h\ 10^m$ A.M. ....
A minimum occurs at . . . $4^h\ 10^m$ P.M. ....
A maximum occurs at or after . . $9^h\ 10^m$ P.M. ....

The pressure at $5^h\ 10^m$ A.M. is very little less than that at $4^h\ 10^m$ P.M., and the pressure at $9^h\ 10^m$ P.M. is exactly the same as at $9^h\ 10^m$ A.M., and $11^h\ 10^m$ A.M.

The mean pressure for the year occurs at $7^h\ 10^m$ A.M.
.... $0^h\ 54^m$ P.M.
.... $6^h\ 54^m$ P.M.

The interval between the first two periods is $5^h\ 44^m$
.... second two periods is $6^h\ 0^m$

Range of the Mean Diurnal Variation of Atmospheric Pressure.—The greatest diurnal range for any month is that for November, being 0·072 in.; the least is that for June, being 0·019 in. The diurnal range is greatest in Winter and least in Summer. The diurnal range of the quarterly means is greatest in Winter (whatever mode of grouping be adopted); it is least in Spring for the meteorological groups, and least in Summer of the astronomical group; the result for the latter is therefore the same as already obtained, Table XVII., for the mean of the diurnal ranges. The diurnal range of the means for the year 1843 is probably under 0·020 in., or about one-eleventh part of the mean of the diurnal ranges for the year.

TABLE XIX.—Extreme Readings of the Barometer for each Month; Extreme Mean Daily Heights for each Month; and Extreme Diurnal Ranges for each Month, together with the Ranges and Means of the Extremes.

Month.	Extreme Readings.								Extreme Daily Means.						Extreme Diurnal Ranges.			
	Highest.			Lowest.			Range.	Mean.	Highest.		Lowest.		Range.	Mean.	Greatest.		Least.	
	d.	h.	in.	d.	h.	in.	in.	in.	d.	in.	d.	in.	in.	in.	d.	in.	d.	in.
January	19	0	30·196	13	2	27·837	2·359	29·016	19	30·169	13	28·022	2·147	29·095	9	1·044	2	0·060
February	7	2	30·063	3	2	28·770	1·293	29·416	7	30·026	3	28·914	1·112	29·470	4	0·660	25	0·047
March	8	0	30·158	30	18	28·969	1·189	29·563	8	30·125	31	29·063	1·062	29·594	30	0·669	8	0·053
April	23	20	29·836	1	8	28·953	0·883	29·395	18	29·791	1	29·026	0·765	29·408	24 25	0·509	11	0·058
May	1	0	30·200	27	6	29·108	1·092	29·654	1	30·184	27	29·141	1·043	29·662	3	0·400	15	0·033
June	14	20	29·996	8	18	28·618	1·378	29·307	12	29·983	9	28·838	1·145	29·410	10	0·597	12	0·021
July	11	2	30·030	29	6	29·135	0·895	29·582	11	29·999	29	29·237	0·762	29·618	17	0·519	13	0·025
August	12	10	30·048	22	4	29·065	0·983	29·556	12	30·022	3	29·130	0·892	29·576	21	0·510	11	0·034
September	22	22	30·368	29	18	29·385	0·983	29·876	23	30·323	30	29·500	0·823	29·911	11	0·412	7	0·029
October	19	0	30·161	28	0	28·415	1·746	29·288	19	30·105	28	28·586	1·519	29·345	28	0·724	25	0·030
November	29	10	30·165	21	20	28·647	1·518	29·406	14	30·080	22	28·963	1·117	29·521	22	0·655	2	0·083
December	28	0	30·207	5	4	29·462	0·745	29·834	18	30·187	5	29·545	0·642	29·866	4	0·481	18	0·044

Extremes of Atmospheric Pressure for 1843.

Highest barometer occurred ··· September 22ᵈ 22ʰ = 30·368 in.
Lowest ························· January 13ᵈ 2ʰ = 27·837
Range = 2·531 in., mean = 29·102 in.

Highest daily mean occurred··· September 23ᵈ = 30·323
Lowest ························· January 13ᵈ = 28·022
Range = 2·301, mean = 29·172.

Highest monthly mean occurred December = 29·963
Lowest ························· January = 29·358
Range = 0·605, mean = 29·660.

The greatest diurnal range of pressure occurred ················ January 9ᵈ, = 1·044 in.
The least ·· June 12ᵈ, = 0·021.
The greatest range of pressure for a month occurred ············ January 13ᵈ—19ᵈ, = 2·359.
The least ·· December, = 0·745.
The greatest range of mean *daily* pressure for a month occurred January 13ᵈ—19ᵈ, = 2·147.
The least ·· December, = 0·642.

The mean of the highest and lowest readings in the year is 0·507 in. less than the mean for the year; the mean of the highest and lowest daily means is 0·437 in. less than the mean for the year. If we compare similarly the means of the highest and lowest readings and daily means in each month with the monthly means, we obtain the following results:—

Monthly Means minus *Mean of Highest and Lowest Readings in each Month.*

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
+0·341	+0·083	+0·099	+0·092	−0·034	+0·312	+0·053	+0·100	+0·059	+0·113	+0·065	+0·128

Monthly Means minus *Mean of Highest and Lowest Daily Means in each Month.*

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
+0·262	+0·029	+0·068	+0·079	−0·042	+0·209	+0·017	+0·080	+0·024	+0·056	−0·050	+0·096

The monthly means exceed the means of the highest and lowest readings in each month excepting May, the mean of the twelve monthly maxima and minima being 0·118 in. less than the mean for the year.

The monthly means exceed the means of the highest and lowest daily means in each month with the exceptions of May and November; the mean of the twelve monthly maxima and minima of daily means being 0·069 in. less than the mean for the year.*

TABLE XX.—Daily, Weekly, and Monthly Means of the Pressure of the Dry Air in 1843.

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1	[........]	29·035	29·468	28·704	29·920	29·009	29·184	29·102	29·576	[29·353]	29·322	29·712
2	29·747	28·910	29·714	[28·968]	29·814	28·700	[29·159]	28·854	29·549	29·400	29·409	29·640
3	29·710	28·748	29·849	29·097	29·436	28·911	29·067	28·716	[29·637]	29·443	29·126	[29·577]
4	29·263	29·296	29·951	28·906	29·113	[29·094]	29·315	28·773	29·756	29·371	29·032	29·624
5	29·440	[29·359]	[29·824]	29·129	29·045	29·429	28·987	29·080	29·808	29·298	[29·140]	29·277
6	29·502	29·678	29·685	29·049	29·025	29·392	28·983	[29·132]	29·565	28·787	29·144	29·583
7	29·072	29·785	29·781	28·783	[29·286]	29·127	29·195	29·403	29·676	28·697	28·982	29·368
8	[28·917]	29·738	29·962	28·904	29·328	28·515	29·300	29·340	29·638	[28·964]	29·148	29·607
9	28·763	29·792	29·914	[29·224]	29·478	28·504	[29·347]	29·482	29·543	29·062	29·411	29·689
10	28·266	29·800	29·596	29·528	29·727	29·107	29·480	29·565	[29·574]	29·262	29·078	[29·650]
11	28·458	29·830	29·589	29·612	29·711	[29·175]	29·648	29·567	29·319	28·680	29·557	29·656
12	28·528	[29·593]	[29·413]	29·465	29·495	29·687	29·477	29·569	29·618	28·858	[29·543]	29·820
13	27·820	29·605	29·012	29·528	29·141	29·644	29·410	[29·488]	29·646	29·112	29·716	29·757
14	28·233	29·416	28·995	29·185	[29·320]	29·596	29·412	29·492	29·403	29·360	29·883	29·657
15	[28·847]	29·117	29·373	29·463	29·101	29·621	29·341	29·372	29·309	[29·223]	29·612	29·562
16	29·261	28·972	29·497	[29·423]	29·103	29·583	[29·303]	29·357	29·363	29·201	29·588	29·837
17	29·548	29·277	29·236	29·487	29·369	29·557	29·440	29·349	[29·429]	29·164	29·111	[29·754]
18	29·692	29·443	29·368	29·511	29·602	[29·544]	29·105	29·374	29·390	29·644	28·858	29·902
19	29·875	[29·174]	[29·198]	29·362	29·639	29·536	29·109	29·150	29·702	29·928	[28·983]	29·874
20	29·776	29·160	29·301	29·248	29·489	29·588	28·975	[29·136]	29·406	29·518	28·848	29·694
21	29·556	29·107	28·925	29·241	[29·417]	29·377	29·023	29·268	29·532	29·331	28·771	29·776
22	[29·475]	29·082	28·859	29·233	29·251	29·490	28·965	28·747	29·882	[29·319]	28·724	29·476
23	29·292	29·167	28·947	[29·230]	29·277	29·492	[29·226]	28·931	29·943	29·214	28·970	29·611
24	29·084	29·328	29·333	29·537	29·243	29·514	29·485	29·167	[29·703]	29·002	29·157	[29·720]
25	29·265	29·374	29·637	29·031	28·989	[29·419]	29·559	29·137	29·818	28·921	29·209	29·805
26	29·353	[29·203]	[29·463]	29·091	28·884	29·420	29·350	29·236	29·671	29·078	[29·201]	29·808
27	29·030	28·846	29·618	29·345	28·813	29·331	29·368	[29·270]	29·372	29·095	28·776	29·842
28	29·036	29·034	29·600	29·126	[29·149]	24·269	29·293	29·107	29·405	28·322	29·348	29·899
29	[29·081]		29·646	29·304	29·469	29·227	28·838	29·357	29·417	[28·990]	29·747	29·787
30	29·001		29·212	[29·491]	29·499	29·172	[29·109]	29·611	29·082	29·058	29·626	29·511
31	29·030		28·764		29·238		29·199	29·566		29·063		[29·463]
Mean	29·138	29·314	29·438	29·235	29·341	29·300	29·250	29·247	29·553	29·149	29·237	29·683

This Table has been formed by subtracting Table IX. from Table XV.

Annual Variation of the Pressure of Dry Air.—The pressure of the dry air is least in January, being 29·138 in.; it increases from thence till March, then diminishes in April; after a slight increase in May it diminishes till August, the pressure being nearly the same in that month as in April; it then increases considerably in September, and diminishes to a greater extent in October and November; the greatest pressure occurs in December, being 29·683 in. The range of the monthly means is therefore 0·545 in. If the pressure in December be kept out of view, the annual variation for 1843 indicates maxima in the equinoctial months, and minima near the solstices. The following are the means for the three different groups, namely,

---

* I have pointed out elsewhere (Transactions of Sections, Report of Brit. Assoc. 1845, p. 15), that the means of the monthly maxima and minima are probably always less than the mean pressure in certain latitudes (including 50° and 60° north), but that in other latitudes the reverse is the case. The explanation of this fact will probably be found in the prevalence and excessive pressures of particular winds.

The mean meteorological seasons, for which June, July, and August constitute summer.
The meteorological seasons for the year 1843, for which July, August, and September constitute summer.
The astronomical seasons, for which May, June, and July constitute summer.

Seasons.	Mean Meteorological.	Meteorological for 1843.	Astronomical.
	in.	in.	in.
Spring,	29·338	29·292	29·329
Summer,	·266	·350	·297
Autumn,	·313	·356	·316
Winter,	·378	·297	·353
Range of Means,	0·112	0·064	0·056

For the mean meteorological and astronomical seasons, the dry air is greatest in Winter and least in Summer; but the meteorological seasons for 1843 give the pressure greatest in Autumn and least in Spring, and do not shew any distinct connexion between the pressure and temperature. Such a connexion, indeed, is not perceptible in the monthly means; the high value of the winter means is due to the high pressure in December, a month, in as far as temperature is concerned, more autumnal than hibernal.

The mean pressure of the dry air for 1843 = 29·324 in.

TABLE XXI.—Hourly Means of the Pressure of Dry Air for each Month and Quarter of 1843.

Period.	18^h.	20^h.	22^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.	Mean.	Range.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
January	29·121	29·140	29·153	29·151	29·134	29·136	29·136	29·156	29·166	29·144	0·045
February	·296	·305	·325	·331	·314	·308	·318	·336	·337	·319	·041
March	·446	·455	·448	·434	·423	·421	·427	·447	·454	·442	·034
April	·249	·236	·223	·224	·212	·211	·218	·238	·263	·237	·052
May	·369	·356	·347	·336	·330	·313	·313	·323	·331	·339	·056
June	·306	·304	·303	·305	·288	·284	·275	·295	·310	·300	·035
July	·277	·248	·243	·238	·226	·234	·219	·235	·254	·248	·058
August	·307	·277	·245	·216	·209	·206	·198	·212	·242	·245	·109
September	·602	·581	·553	·530	·516	·521	·512	·533	·561	·554	·090
October	·169	·173	·168	·151	·149	·135	·137	·148	·154	·156	·038
November	·201	·206	·221	·228	·227	·242	·261	·267	·274	·236	·073
December	·689	·689	·700	·689	·670	·668	·679	·684	·688	·685	·032
Spring	·355	·349	·339	·331	·322	·315	·320	·336	·349	·340	·040
Summer	·297	·277	·263	·253	·241	·242	·231	·247	·269	·265	·066
Autumn	·324	·320	·314	·303	·297	·299	·304	·316	·330	·315	·033
Winter	·369	·378	·392	·390	·372	·371	·377	·392	·396	·382	·027
The Year	·336	·331	·328	·320	·309	·307	·308	·323	·337	·326	·030

This Table has been formed by subtracting Table XI. from Table XVIII.

Diurnal Variation of the Pressure of Dry Air.—An examination of the monthly means will shew that they may be separated into two classes, namely, months in which two maxima and minima are visible, and months in which it is probable that only one maximum and minimum occur; the same division was noticed in the case of the total atmospheric pressure. One month, September, which shews a double maximum and minimum of total pressure, shews only one of each for the dry air. The months in which double maxima and minima evidently occur are January, February, March, June, November, and December. A secondary and apparently accidental maximum occurs at 3 P.M. in some months.

On the whole, the Winter months present two and the Summer months only one maximum and minimum; this is also evident in the means of groups.

Mean Meteorological Seasons.

Spring, The maximum between 9^{h} P.M. and 5^{h} A.M. The minimum at 3^{h} 30^{m} P.M.
Summer, The maximum before 5^{h} A.M. A secondary minimum about 2^{h} P.M.
A secondary maximum about 3^{h} 20^{m} P.M. The minimum about 5^{h} P.M.
Autumn, The maximum between 9^{h} P.M. and 5^{h} A.M. The minimum about 1^{h} 40^{m} P.M.
Winter, The maximum after 9^{h} P.M. The minimum before 5^{h} A.M.
A maximum at 9^{h} 40^{m} A.M. A minimum at 2^{h} 20^{m} P.M.

Astronomical Seasons.

Spring, The maximum after 9^{h} P.M. A minimum before 5^{h} A.M.
A maximum at 8^{h} 10^{m} A.M. The minimum at 2^{h} 40^{m} P.M.
Summer, The maximum before 5^{h} A.M. The minimum at 4^{h} 40^{m} P.M.
Autumn, The maximum before 5^{h} A.M. The minimum about 4^{h} 20^{m} P.M.
Winter, The maximum after 9^{h} P.M. The minimum before 5^{h} A.M.
A maximum at 9^{h} 40^{m} A.M. A minimum at 1^{h} 40^{m} P.M.

The diurnal variation for the year 1843 gives—

The maximum between 9 P.M. and 5 A.M.
The minimum at 3^{h} 20^{m} P.M.

The division, then, of the total pressure of the atmosphere into two parts, namely, the dry air and aqueous vapour, indicates only a single maximum and minimum in the diurnal curve *for the year* (as has been shewn by M. DOVE and Colonel SABINE). The minimum pressure of dry air takes place nearly two hours after the maximum temperature. We have still the double maximum and minimum in the Winter months. Why are both exhibited in the pressure of the dry air in Winter? We have seen that the diurnal range of the aqueous vapour follows, to some extent, the diurnal range of temperature, and that it is greater in Summer than in Winter. We have also seen that, for the year 1843, the diurnal variation of the total atmospheric pressure has a greater range in Winter than in Summer. It seems curious that the diurnal range of total pressure should diminish when the ranges of its two components increase, and that, when the diurnal ranges of the two components diminish, the diurnal range of the compound pressure should increase. There is no difficulty in seeing, even if the theory be at fault, or if the pressure of aqueous vapour be inaccurately determined, that the comparatively great diurnal range of aqueous vapour pressure for the summer months, and for the year, will swamp the smaller range of the total pressure, and produce a curve for the dry air, with a single maximum and minimum, inverse to that for the pressure of aqueous vapour. The fact that, when the diurnal range of the aqueous vapour pressure is least, namely, in Winter, the diurnal range of the total pressure is greatest, and the double maximum and minimum most distinctly marked both for the assumed dry air and total pressures, leave this mode of resolution with its original difficulties.

It was pointed out, Table XI., that a secondary maximum and minimum of the pressure of aqueous vapour occurred in several months about 1^{h}, 3^{h}, and 5^{h} P.M. No such periods were observed for the humidity or total atmospheric pressure. Of course, then, in assuming the total pressure to be composed of the pressures of dry air and of aqueous vapour (as calculated), we may expect to find the dry air accommodating itself to the calculated vapour pressure. Accordingly, as has been noticed above, secondary minima and maxima of dry air occur at the same times as the secondary maxima and minima of aqueous vapour. This does not seem very probable.

TABLE XXII.—Extremes of the Mean Daily Pressures of Dry Air, with their Ranges and Means.

Month.	Highest.		Lowest.		Range.	Mean.	Monthly Mean *minus* Mean.
	d.	in.	d.	in.	in.	in.	in.
January	19	29·875	13	27·820	2·055	28·847	+0·297
February	11	29·830	3	28·748	1·082	29·289	+0·030
March	8	29·962	31	28·764	1·198	29·364	+0·079
April	11	29·612	1	28·704	0·908	29·158	+0·079
May	1	29·920	27	28·813	1·107	29·366	−0·027
June	12	29·687	9	28·504	1·183	29·095	+0·205
July	11	29·648	29	28·838	0·810	29·243	+0·005
August	30	29·611	3	28·716	0·895	29·163	+0·082
September	23	29·943	30	29·082	0·861	29·512	+0·042
October	19	29·928	28	28·322	1·606	29·125	+0·031
November	14	29·883	22	28·724	1·159	29·303	−0·067
December	18	29·902	5	29·277	0·625	29·589	+0·096

This Table has been formed from Table XX.

The highest mean daily pressure of dry air occurred March 8^{d} = 29·962 in.
The lowest .... Jan. 13^{d} = 27·820 in. } Range = 2·142 in., Mean = 28·891 in.

This mean is 0·433 in. less than the mean for the year.

The mean of the 12 monthly maxima and minima of the daily means is 0·071 in. less than the mean for the year.

The greatest monthly range of the daily means occurred January 13—19 = 2·055 in.
The least .... December = 0·625.

The ranges and means give nearly the same results as have been obtained for the total atmospheric pressure.

TABLE XXIII.—Daily, Weekly, and Monthly Means of the Pressure of Wind in Pounds on the Square Foot of Surface, deduced from the greatest Pressures occurring *between* the Two Hourly Observations.

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1	[.....]	4·24	0·52	1·04	0·30	0·40	1·56	1·20	0·11	[0·69]	0·02	0·07
2	0·50	3·96	0·54	[0·81]	0·28	0·50	[1·14]	0·92	0·28	1·27	0·01	0·47
3	0·50	3·42	0·23	0·62	0·17	1·18	3·20	0·42	[0·22]	0·34	0·06	[1·72]
4	2·20	5·97	0·18	0·52	0·35	[0·64]	0·59	0·03	0·64	0·67	1·31	1·32
5	2·00	[2·67]	[0·23]	0·73	2·47	1·04	0·26	1·35	0·15	0·37	[1·08]	3·96
6	1·00	1·29	0·15	0·64	0·67	0·31	0·99	[0·44]	0·12	1·48	1·80	3·90
7	3·50	0·98	0·27	0·74	[0·92]	0·39	0·22	0·39	0·16	1·35	1·66	2·96
8	[2·18]	0·42	0·00	0·85	0·72	2·57	0·14	0·42	0·02	[0·57]	1·67	1·48
9	2·06	2·10	0·19	[1·05]	0·89	1·70	[0·46]	0·02	0·12	0·11	0·40	0·10
10	3·52	1·80	0·05	0·90	0·45	1·62	0·42	0·06	[0·12]	0·01	0·06	[1·27]
11	0·99	0·74	0·20	1·22	0·25	[1·27]	0·35	0·19	0·12	0·09	0·22	0·41
12	0·00	[1·06]	[0·41]	1·94	0·13	0·43	0·62	0·26	0·12	3·42	[0·37]	0·35
13	1·88	0·17	1·37	1·27	0·99	0·57	0·23	[0·18]	0·16	1·40	0·15	2·31
14	2·72	1·43	0·35	2·41	[0·88]	0·71	0·47	0·28	0·14	0·41	0·32	3·18
15	[1·45]	0·12	0·31	1·02	0·78	0·47	1·22	0·25	0·32	[1·19]	1·09	3·23
16	1·22	0·05	0·47	[1·02]	1·57	0·32	[0·58]	0·07	0·57	0·12	0·25	0·40

TABLE XXIII.—*Continued.*

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
17	1·35	0·27	1·72	0·02	1·56	0·28	0·33	0·05	[0·44]	1·40	1·77	[1·25]
18	1·52	0·04	0·51	0·89	0·61	[0·43]	0·87	0·03	1·02	0·37	1·77	0·08
19	0·99	[0·68]	[0·69]	0·52	0·62	0·56	0·37	0·08	0·04	0·10	[1·52]	0·17
20	0·31	2·10	0·32	0·18	1·29	0·10	0·66	[0·42]	0·55	0·71	1·13	0·46
21	0·10	1·06	0·60	0·21	[0·66]	0·84	0·65	0·61	0·52	0·57	0·89	0·07
22	[1·14]	0·57	0·54	0·11	0·62	0·10	0·12	0·91	0·02	[1·01]	3·32	3·07
23	1·68	1·04	0·64	[0·78]	0·45	0·35	[0·39]	0·86	0·05	2·48	0·13	2·65
24	1·83	0·27	0·67	1·25	0·38	0·19	0·12	0·09	[0·29]	1·78	0·00	[1·30]
25	1·92	0·02	1·22	2·37	0·56	[0·59]	0·00	0·63	0·56	0·45	0·00	0·74
26	1·42	[0·71]	[0·81]	0·54	0·97	0·35	0·80	0·28	0·41	0·26	[1·23]	0·90
27	3·39	1·44	1·69	0·72	0·37	0·88	1·19	[0·42]	0·19	0·39	2·90	0·38
28	5·47	0·95	0·60	0·90	[0·50]	1·69	0·22	0·95	0·97	2·03	1·52	0·57
29	[4·16]		0·06	0·27	0·57	0·39	0·62	0·51	0·28	[0·49]	2·82	0·98
30	6·60		0·18	[0·44]	0·17	0·87	[0·73]	0·04	0·63	0·10	0·61	2·26
31	3·84		1·80		0·38		0·24	0·03		0·14		[0·80]
Mean	2·02	1·44	0·57	0·88	0·69	0·72	0·63	0·40	0·32	0·84	1·00	1·40

The means in this Table have been obtained from the daily observations by the following formula:—The observation at 18^h being that of the maximum pressure of wind which has occurred from 10^h of the previous evening (excepting Monday mornings, when it is the maximum pressure which has occurred from about noon of the previous day), the observation at 18^h may be used as the maximum pressure belonging to some one couple of hours in the previous morning (excepting on Mondays). M being the daily means of the maxima in the previous Table, S the sum of the nine daily observations, 10_p the maximum observed at the 10^h preceding the 18^h observation, 10_s the maximum observed at the 10^h succeeding the 18^h observation, then

$$M = \frac{S + 10_p + 20 + 10_s}{12}$$

For Mondays the means have been obtained by the formula

$$M = \frac{S' + 3 \times 20 + 10_s}{12}$$

where S′ is the sum of the eight observations from 20^h till 10^h; the observation at 18^h obviously could not be used for the daily means on Mondays.

The means of the four daily observations were taken for the daily means in the first week of January.

Annual Variation of the Means of the Maximum Pressures of the Wind.—The greatest monthly mean is that for January, being 2·02 lb., and the least is that for September, being 0·32 lb. The pressure diminishes from January till March, when there is a minimum, the means for the four months following being greater; it increases from September to December. The following are the means for the three groups of seasons, namely,

The mean meteorological seasons, for which June, July, and August constitute summer.
The meteorological seasons for 1843, for which July, August, and September constitute summer.
The astronomical seasons, for which May, June, and July constitute summer.

Seasons.	Mean Meteorological.	Meteorological for 1843.	Astronomical.
	lb.	lb.	lb.
Spring, . .	0·71	0·76	0·96
Summer, . .	0·58	0·45	0·68
Autumn, . .	0·72	1·08	0·52
Winter, . .	1·62	1·34	1·47
Range of Means, .	1·04	0·89	0·95

The pressure is greatest in the coldest quarter and least in the warmest quarter of 1843.
The mean for the year of the maximum pressures = 0·91 lb.

TABLE XXIV.—Daily, Weekly, and Monthly Means of the Pressure of Wind in Pounds on the Square Foot of Surface, deduced from the greatest Pressures observed within 10^m *at* the hours of Observation.

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1	[......]	2·30	0·22	0·39	0·22	0·25	1·06	0·47	0·00	[0·37]	0·00	0·00
2	0·10	2·50	0·28	[0·58]	0·18	0·33	[0·73]	0·43	0·12	0·73	0·00	0·28
3	0·20	2·08	0·07	0·35	0·06	0·52	2·31	0·20	[0·10]	0·12	0·00	[0·89]
4	1·07	4·54	0·08	0·27	0·25	[0·34]	0·26	0·01	0·41	0·47	0·77	0·51
5	0·87	[1·75]	[0·11]	0·42	1·51	0·55	0·10	0·56	0·04	0·17	[0·46]	2·79
6	0·52	0·84	0·03	0·35	0·14	0·10	0·42	[0·17]	0·02	0·94	0·67	1·55
7	1·32	0·54	0·18	0·21	[0·52]	0·27	0·08	0·15	0·07	0·60	0·82	1·66
8	[1·19]	0·02	0·00	0·40	0·55	1·71	0·02	0·07	0·01	[0·32]	0·50	0·68
9	1·16	1·39	0·12	[0·52]	0·46	0·91	[0·19]	0·01	0·03	0·03	0·12	0·02
10	2·88	0·71	0·00	0·39	0·22	0·93	0·22	0·02	[0·05]	0·00	0·00	[0·60]
11	0·38	0·44	0·11	0·56	0·15	[0·73]	0·14	0·07	0·05	0·16	0·05	0·15
12	0·00	[0·57]	[0·19]	1·22	0·04	0·21	0·28	0·07	0·07	2·02	[0·14]	0·12
13	1·29	0·07	0·72	0·47	0·47	0·27	0·07	[0·07]	0·07	0·36	0·06	0·98
14	2·47	0·80	0·12	1·86	[0·48]	0·36	0·23	0·12	0·07	0·15	0·13	2·14
15	[1·00]	0·00	0·05	0·62	0·42	0·22	0·67	0·12	0·21	[0·55]	0·47	1·90
16	0·57	0·02	0·15	[0·60]	0·93	0·23	[0·31]	0·02	0·34	0·04	0·02	0·12
17	0·85	0·19	0·79	0·00	0·86	0·18	0·13	0·00	[0·22]	0·66	1·58	[0·72]
18	0·81	0·00	0·12	0·51	0·24	[0·26]	0·57	0·01	0·45	0·08	0·41	0·02
19	0·58	[0·44]	[0·29]	0·13	0·37	0·33	0·21	0·02	0·01	0·07	[0·76]	0·02
20	0·02	1·42	0·12	0·07	0·93	0·02	0·31	[0·20]	0·27	0·38	0·40	0·14
21	0·02	0·66	0·20	0·10	[0·48]	0·60	0·33	0·27	0·18	0·17	0·73	0·01
22	[0·66]	0·35	0·34	0·07	0·42	0·06	0·07	0·52	0·00	[0·44]	1·40	1·98
23	0·73	0·80	0·25	[0·53]	0·18	0·18	[0·21]	0·40	0·00	1·17	0·02	1·24
24	1·13	0·02	0·46	0·83	0·77	0·12	0·06	0·04	[0·18]	0·54	0·00	[0·69]
25	1·47	0·00	0·86	1·92	0·22	[0·32]	0·03	0·28	0·28	0·32	0·00	0·34
26	0·87	[0·37]	[0·49]	0·21	0·47	0·17	0·46	0·11	0·19	0·12	[0·71]	0·41
27	2·48	0·97	1·16	0·42	0·07	0·52	0·55	[0·19]	0·46	0·16	1·57	0·17
28	4·77	0·22	0·23	0·42	[0·21]	0·86	0·07	0·51	0·52	1·36	0·90	0·34
29	[2·91]		0·00	0·13	0·23	0·13	0·27	0·18	0·13	[0·29]	1·75	0·22
30	5·00		0·10	[0·24]	0·03	0·50	[0·31]	0·00	0·24	0·05	0·19	0·93
31	2·07		1·93		0·25		0·09	0·03		0·05		[0·29]
Mean	1·29	0·87	0·32	0·49	0·39	0·40	0·35	0·17	0·16	0·42	0·48	0·72

The means in this Table have been obtained from the nine observations by the formula already given, Table I., for the temperature of the air. The daily means in the first week of January are the means of the four daily observations.

Annual Variation of the Means of the Maximum Pressures of Wind at the Hours of Observation.—Naming these pressures the *mean* pressures, for which they may be taken approximately, we find the same law of variation as for the *maximum* pressures. The *mean* pressure is greatest for January, the mean being 1·29 lb.; it diminishes till March, in which there is a minimum, the means for the four months following being greater; the least pressures occur in August and September, the mean for the latter being 0·16 lb.; the pressure then increases till December. The following are the means for the three groups of seasons :—

Seasons.	Mean Meteorological.	Meteorological for 1843.	Astronomical.
	lb.	lb.	lb.
Spring, . .	0·40	0·43	0·56
Summer, . .	0·31	0·23	0·38
Autumn, . .	0·35	0·54	0·25
Winter, . .	0·96	0·83	0.83
Range of Means, .	0·65	0·60	0·58

The *mean* pressure is greatest for the mean meteorological winter, and least for the warmest quarter of 1843.

The *mean* pressure for the year 1843 = 0·50 lb.

The monthly means of the *maximum* pressures, Table XXIII., bear to the monthly means of the *mean* pressures, Table XXIV., the following ratios :—

Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
1·57	1·66	1·78	1·80	1·77	1·80	1·80	2·35	2·00	2·00	2·08	1·98

The mean for the year of the *maximum* pressures is 1·82 times greater than the mean for the year of the *mean* pressures.

TABLE XXV.—Maximum Pressure of Wind in each Civil Day in 1843, with the Monthly Means.

Civil Day.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1	2·0	6·8	1·0	2·8	0·8	0·9	3·0	2·3	0·2	2·4	0·1	0·8
2	1·2	6·2	1·2	0·8	0·6	1·0	3·8	2·2	0·5	2·4	0·0	2·0
3	1·0	5·5	0·5	2·0	0·5	1·6	5·1	1·2	3·6	0·7	0·2	2·5
4	3·0	12·8	0·5	1·2	0·9	1·8	1·3	0·2	1·1	1·9	2·4	3·0
5	3·0	1·8	2·5	2·8	4·8	1·5	0·9	3·2	0·4	0·8	4·5	7·6
6	1·5	2·5	0·8	2·5	2·8	0·6	2·2	2·2	0·7	2·7	2·8	5·5
7	5·8	2·0	1·2	1·5	2·6	1·1	0·6	1·5	0·6	2·8	4·2	4·9
8	3·5	2·2	0·0	2·2	1·7	3·6	0·5	1·5	0·2	3·8	3·4	3·2
9	3·8	3·5	0·5	1·0	1·4	2·9	0·6	0·1	0·6	0·5	0·7	0·2
10	6·0	3·2	0·2	2·8	0·9	3·5	1·7	0·2	0·3	0·1	0·5	0·7
11	5·5	1·2	0·5	3·2	0·8	1·7	0·7	0·7	0·6	0·8	0·5	1·2
12	0·0	0·8	1·8	5·5	0·6	0·7	1·9	0·6	0·5	7·5	0·7	1·1
13	3·5	0·8	5·0	2·5	2·0	1·2	0·5	0·3	0·5	4·1	0·3	3·6
14	7·5	3·0	0·8	4·0	1·2	1·4	1·1	1·0	0·4	0·8	1·0	6·1
15	2·0	0·5	0·8	2·0	1·2	0·8	2·6	0·8	0·6	1·2	3·8	7·5
16	1·8	0·2	1·2	0·8	2·4	1·0	2·6	0·3	2·1	0·2	0·5	0·8
17	3·0	1·0	2·8	0·5	2·5	0·4	0·6	0·5	0·7	3·1	3·9	3·1
18	3·0	0·5	1·2	2·0	1·2	0·5	3·4	0·2	2·7	0·9	4·5	0·3
19	1·8	1·5	1·2	1·0	1·4	1·0	1·3	0·3	0·2	0·4	2·6	0·3
20	1·2	3·8	0·5	0·8	1·9	0·2	1·3	1·1	1·2	1·5	5·1	1·1
21	0·8	2·5	1·8	0·5	1·7	1·5	1·6	1·2	1·0	1·6	3·8	0·2
22	1·5	0·8	2·5	0·5	0·8	0·3	0·6	2·0	0·1	4·2	7·2	7·3
23	3·0	1·2	2·0	1·5	1·0	1·2	6·1	1·9	0·2	4·7	0·3	5·2
24	3·5	0·8	2·2	3·0	2·8	0·5	0·4	0·4	0·3	4·2	0·0	3·4
25	3·2	0·2	3·0	4·8	1·6	0·5	0·2	1·9	2·0	0·7	0·0	2·2
26	2·5	1·2	4·0	0·8	1·6	0·5	1·9	0·6	1·1	0·6	4·3	3·0
27	6·0	2·5	2·8	2·2	0·7	2·0	2·3	1·4	2·1	1·0	4·7	0·8
28	9·0	2·0	1·2	1·8	3·0	2·8	0·7	2·9	2·4	4·1	4·7	1·8
29	5·0		0·5	0·7	2·0	1·5	1·9	1·3	0·7	6·1	4·8	1·7
30	9·8		0·5	1·5	0·7	1·9	1·7	0·2	1·6	0·3	2·2	3·7
31	7·2		3·8		0·9		0·9	0·2		0·3		4·2
Mean	3·60	2·54	1·56	1·96	1·58	1·34	1·74	1·11	0·97	2·14	2·46	2·87

If the maximum pressure observed at 18^{h} on Monday morning was greater than the maximum observed about noon on Sunday, the former was taken as the maximum for Sunday.

The monthly means of the maximum pressure of wind in each day follow nearly the same law as the monthly means, Tables XXIII. and XXIV.

TABLE XXVI.—Means of the Maximum Pressures of Wind between the Hours of Observation for each Month and Quarter of 1843.

Period.	10^h—18^h.	18^h—20^h.	20^h—22^h.	22^h—0^h.	0^h—2^h.	2^h—4^h.	4^h—6^h.	6^h—8^h.	8^h—10^h.	Range.
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
January	2·56	2·29	2·07	2·42	2·40	1·94	1·71	2·08	1·60	0·82
February	1·96	1·32	1·61	1·40	1·50	1·60	1·79	1·20	1·11	0·68
March	0·89	0·39	0·43	0·67	0·97	1·00	0·71	0·43	0·41	0·61
April	0·87	0·61	1·04	1·26	1·33	1·38	1·12	0·78	0·56	0·82
May	0·86	0·47	0·69	0·86	1·02	1·07	1·06	0·82	0·52	0·60
June	0·75	0·56	0·72	0·78	1·08	1·02	0·92	0·82	0·53	0·55
July	0·85	0·37	0·64	0·75	0·95	1·09	0·91	0·72	0·46	0·72
August	0·37	0·16	0·42	0·54	0·80	0·74	0·62	0·50	0·28	0·64
September	0·40	0·18	0·35	0·60	0·71	0·71	0·47	0·22	0·16	0·55
October	1·60	0·76	0·80	1·25	1·30	0·94	0·79	0·62	0·62	0·68
November	1·48	1·03	1·09	1·38	1·41	1·11	0·72	0·53	0·69	0·88
December	1·93	1·19	1·48	1·41	1·60	1·33	1·42	1·58	1·35	0·41
Spring	0·87	0·49	0·72	0·93	1·11	1·15	0·96	0·68	0·50	0·66
Summer	0·66	0·36	0·59	0·69	0·94	0·95	0·82	0·68	0·42	0·59
Autumn	1·16	0·66	0·75	1·08	1·14	0·92	0·66	0·46	0·49	0·68
Winter	2·15	1·60	1·72	1·74	1·83	1·62	1·64	1·62	1·35	0·48
The Year	1·21	0·78	0·95	1·11	1·26	1·16	1·02	0·86	0·69	0·57

The observations in the first week of January were not made use of in obtaining the hourly means for that month in Tables XXVI. and XXVII. No observations having been made at 18^h in the second week, a correction was applied to the mean for that hour of $-0·11$ in Table XXVI., and of $-0·14$ in Table XXVII., obtained from Tables XXIII. and XXIV. as follows:—

{Mean pressure, January 9—31 = 2·21 *minus* mean pressure, January 16—31 = 2·32} = − 0·11.

{Mean pressure, January 9—31 = 1·43 *minus* mean pressure, January 16—31 = 1·57} = − 0·14.

The means for January in Tables XXVI. and XXVII. are further corrected by $-0·15$ and $-0·10$ respectively, in order to render the means for that month equal to those obtained Tables XXIII. and XXIV.

Diurnal Variation of the Maximum Pressure of Wind.—The means for the months of January, February, and December are very irregular, presenting two or three maxima and two or three minima within the nine daily observations; in the other months only one maximum is evident, occurring between 11 A.M. and 2 P.M. The minimum occurs after 9 P.M. and before 7 A.M. The following are the interpolated hours for the maximum for the mean meteorological and astronomical seasons, obtained on the assumption that the means correspond to the middle of the interval to which they belong; for example, that the mean of the maximum pressures occurring betwixt 0^h and 2^h correspond to 1^h:—*

Seasons.	Mean Meteorological.	Astronomical.	
Spring, . .	1^h 20^m P.M.	1^h 40^m P.M.	Makerstoun mean time.
Summer, . .	1^h 10^m P.M.	1^h 20^m P.M.	....
Autumn, . .	11^h 10^m P.M.	11^h 30^m A.M.	....
Winter, . .	0^h 10^m P.M.	11^h 30^m A.M.	....

The maximum pressures occur latest in the day in Spring, and earliest in Autumn and Winter.

A secondary minimum and maximum occur in Winter of the meteorological group about 2^h P.M. and 4^h P.M. respectively, and in Winter of the astronomical group about 4^h P.M. and 6^h P.M. respectively.

The maximum in the diurnal variation for the year occurs at 0^h 30^m P.M. The value of the maximum pressure increases regularly from 8^h 10^m A.M. till 0^h 30^m P.M. at the rate of 0·08 lb. per hour, and it diminishes from 0^h 30^m P.M. till 8^h 10^m at the same rate.

---

* This assumption is obviously inexact, as the means of the maximum pressures, while the pressure is *increasing*, will most probably belong to nearly the termination of the periods in which they occur, but since, while the pressure is *diminishing*, they will probably correspond to nearly the commencement of the periods, the interpolated time of maximum will not be affected by the error of the hypothesis.

TABLE XXVII.—Means of the Maximum Pressures of Wind within 10^m *at* the Hours of Observation for each Month and Quarter of 1843.

Period.	18^h.	20^h.	22^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.	Mean.	Range.
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
January	1·23	1·33	1·62	1·77	1·40	1·15	1·16	1·07	1·10	1·28	0·70
February	0·87	0·80	0·75	1·10	1·15	1·13	0·86	0·62	0·70	0·86	0·53
March	0·29	0·18	0·31	0·50	0·60	0·61	0·22	0·14	0·21	0·32	0·47
April	0·37	0·46	0·63	0·85	0·89	0·58	0·63	0·24	0·26	0·49	0·65
May	0·20	0·33	0·44	0·56	0·71	0·65	0·70	0·36	0·20	0·40	0·51
June	0·24	0·32	0·50	0·62	0·62	0·61	0·50	0·39	0·30	0·41	0·38
July	0·25	0·28	0·48	0·39	0·56	0·67	0·41	0·32	0·15	0·34	0·52
August	0·05	0·07	0·27	0·33	0·34	0·31	0·33	0·16	0·06	0·17	0·29
September	0·06	0·07	0·27	0·40	0·44	0·32	0·09	0·03	0·07	0·16	0·41
October	0·48	0·35	0·44	0·62	0·68	0·48	0·33	0·24	0·23	0·41	0·45
November	0·57	0·52	0·40	0·82	0·57	0·50	0·33	0·21	0·37	0·47	0·61
December	0·75	0·71	0·78	0·58	0·95	0·62	0·67	0·98	0·55	0·71	0·43
Spring	0·29	0·32	0·46	0·64	0·73	0·61	0·52	0·25	0·22	0·40	0·51
Summer	0·18	0·22	0·42	0·45	0·51	0·53	0·41	0·29	0·17	0·31	0·36
Autumn	0·37	0·31	0·36	0·61	0·56	0·43	0·25	0·16	0·22	0·35	0·45
Winter	0·95	0·95	1·05	1·15	1·17	0·97	0·90	0·89	0·79	0·95	0·38
The Year	0·44	0·45	0·57	0·71	0·74	0·63	0·52	0·39	0·35	0·50	0·39

Diurnal Variation of the Mean *Pressures of the Wind.*—The means for the month of December are irregular, presenting three maxima and three minima within the nine observations; February, March, October, and November indicate two maxima and two minima in the twenty-four hours. The maximum pressure occurs, in general, about 1^h P.M. The following are the periods of the maxima for the mean meteorological and astronomical seasons :—

Seasons.	Mean Meteorological.	Astronomical.	
Spring, . .	0^h 50^m P.M.	0^h 30^m P.M.	Makerstoun mean time.
Summer, . .	2^h 50^m P.M.	2^h 20^m P.M.	....
Autumn, . .	11^h 40^m A.M.	0^h 40^m P.M.	....
Winter, . .	0^h 50^m P.M.	11^h 50^m A.M.	....

The periods for the astronomical group are the most distinct and regular; from these the maximum pressure of wind occurs latest in Summer, about an hour after the maximum temperature, and earliest in Winter, about an hour before the maximum temperature. In Spring and Autumn the maximum pressures occur about an hour before the maximum temperatures. In Autumn of the mean meteorological group a minimum of pressure occurs at 7^h 10^m A.M. and another at 7^h 10^m P.M.

In Spring of the astronomical group minima occur at 7^h 10^m A.M. and 7^h 10^m P.M.
In Autumn .... a minimum occurs at 7^h 10^m A.M.
In Winter .... a minimum occurs at 5^h 10^m P.M., and a maximum at 7^h 10^m P.M.

In the means for the year the maximum pressure occurs at 0^h 25^m P.M., or an hour before the maximum temperature of the air. The pressure increases regularly from 7^h 10^m A.M. till 0^h 25^m P.M., at the rate of 0·06 lb., and it diminishes from 0^h 25^m till 7^h 10^m at the same rate. The forenoon and afternoon branches of the mean diurnal curve are therefore straight lines, forming the same angle with the ordinates.

TABLE XXVIII.—Maximum Pressures of Wind, with the Maxima of the Daily Means, Tables XXIV. and XXV., and corresponding Directions of the Wind for each Month in 1843.

Month.	Maximum Pressure.				Max. of Daily Means of *Max.* Pressures.			Max. of Daily Means of *Mean* Pressures.		
	d.	h. h.	lb.	Pt.	d.	lb.	Pt.	d.	lb.	Pt.
January	30	6— 8	9·8	NW.	30	6·60	W.	30	5·00	W.
February	3	20—22	12·8	N by W.	4	5·97	N by W.	4	4·54	N by W.
March	13	0— 2	5·0	WNW.	31	1·80	SW by S.	31	1·93	SW by S.
April	12	4— 6	5·5	WNW.	14	2·41	W by S.	25	1·92	SW.
May	5	0— 2	4·8	S.	5	2·47	SSW.	5	1·51	SSW.
June	7	20—22	3·6	S by W.	8	2·57	SSW.	8	1·71	SSW.
July	22	10—24	6·1	NNE.	3	3·20	SW.	3	2·31	SW.
August	5	8—10	3·2	WSW.	5	1·35	SW by W.	5	0·56	SW by W.
September	3	0—18	3·6	W by S.	18	1·02	SW.	28	0·52	NNW.
October	11	10—18	7·5	N by E.	12	3·42	NNW.	12	2·02	NNW.
November	21	22—24	7·2	NW.	22	3·32	W.	29	1·75	WNW.
December	4	10—18	7·6	SW.	5	3·96	SW.	5	2·79	SW.

The greatest pressure of the wind in the year 1843 occurred February 4^d 20^h—22^h, being 12·8 lb., the wind blowing from N. by W.

The greatest mean daily pressure occurred January 30^d, the wind blowing from W.; being, for the maxima *between* the hours of observation, 6·6 lb., and for the maxima *at* the hours of observation (or *mean*), 5·0 lb.

The maximum pressure of the wind in three months occurs between 1^h P.M. and 9^h P.M.; the greater number of the monthly maxima seem to occur between midnight and noon.

The monthly maxima occurred on five months while the wind was blowing in the quadrant from N. to W.; on four months while the wind was blowing from between S. and W.; on one month while blowing from S.; and on two months while blowing from between N. and E.

All the monthly maxima of the daily means occurred with winds from between NW. by W., and SSW.

TABLE XXIX.—Number of times which the Wind blew from each Point of the Compass at the together with the *sums* of the Pres-

Wind blowing from	January.		February.		March.		April.		May.		June.	
	Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.
		lb.		lb.		lb.		lb.		lb.		lb.
N.	...	...	5	8·2	9	3·9	3	3·2	...	...	7	5·8
N by E.	...	...	10	13·1	2	0·4	...	...	...	...	5	3·4
NNE.	...	...	11	6·7	...	...	4	2·6	2	0·6	11	4·9
NE by N.	...	...	25	13·0	3	0·6	...	...	11	5·4	51	18·9
NE.	...	...	22	16·3	4	2·4	6	4·7	38	20·0	27	12·5
NE by E.	...	...	8	4·4	3	1·2	1	0·5	20	12·4	13	5·4
ENE.	...	...	12	13·5	12	11·7	2	0·6	24	16·9	14	4·7
E by N.	...	...	2	2·3	15	11·9	1	0·2	12	8·9	...	...
E.	...	...	...	...	4	1·1	2	0·7	6	4·3	1	0·1
E by S.	...	...	...	...	1	0·8	1	0·2	5	6·2	...	...
ESE.	...	...	...	...	...	...	1	0·5	1	0·1	...	...
SE by E.	...	...	...	...	...	...	...	...	...	...	...	...
SE.	3	6·5	...	...	1	0·2	3	1·6	2	1·2	...	...
SE by S.	1	3·0	...	...	3	1·2	...	...	1	0·3	...	...
SSE.	...	...	...	...	5	3·2	...	...	...	...	3	4·5
S by E.	8	7·3	...	...	6	3·3	8	8·8	...	...	3	1·5
S.	...	...	...	...	4	2·2	11	16·6	6	9·3	2	1·3
S by W.	...	...	...	...	3	2·5	2	0·7	2	2·0	5	6·6
SSW.	7	6·6	...	...	2	0·4	7	4·7	8	5·8	1	0·1
SW by S.	21	25·4	2	5·4	7	10·5	1	0·5	12	7·0	4	4·3
SW.	26	51·1	13	26·2	12	9·6	19	11·9	7	4·2	1	0·5
SW by W.	44	54·3	5	11·0	14	8·7	10	9·3	5	3·4	3	2·2
WSW.	7	7·8	...	...	5	2·6	9	6·8	6	2·8	7	4·7
W by S.	14	12·6	...	...	...	...	9	14·2	1	0·2	6	5·3
W.	15	33·9	...	...	2	0·4	6	7·7	...	...	10	9·0
W by N.	1	8·2	1	4·8	...	...	1	1·2	...	...	1	0·2
WNW.	4	18·3	4	1·6	3	2·4	4	5·2	1	0·6	2	2·4
NW by W.	5	21·9	1	1·5	...	...	2	2·7	...	...	...	...
NW.	8	18·8	...	...	...	...	6	7·4	...	...	3	2·2
NW by N.	8	14·6	2	7·0	...	...	6	3·5	...	...	2	3·0
NNW.	2	1·0	11	14·5	1	0·2	5	3·1	...	...	3	1·1
N by W.	3	2·8	15	41·9	6	1·5	5	3·8	...	...	2	1·8

Observation Hours, with a Pressure of one-tenth of a pound or upwards on a square foot of surface, sures for each Month in 1843.

July.		August.		September.		October.		November.		December.		Wind blowing from
Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.	
	lb.		lb.		lb.		lb.		lb.		lb.	
3	0·9	1	0·1	7	4·0	3	1·8	1	0·5	...	...	N.
2	0·3	...	...	2	0·5	4	7·7	...	...	...	...	N by E.
9	2·5	1	0·1	1	0·1	5	4·2	2	0·3	...	...	NNE.
3	1·2	1	0·1	3	0·5	1	0·2	2	0·4	...	...	NE by N.
2	0·2	3	0·6	9	2·0	6	1·1	...	...	...	...	NE.
5	1·4	3	0·5	2	0·7	...	...	...	...	...	...	NE by E.
2	0·3	3	0·8	6	1·1	...	...	...	...	...	...	ENE.
1	0·1	...	...	...	...	2	3·4	1	0·1	...	...	E by N.
2	0·6	...	...	...	...	3	4·4	...	...	...	...	E.
...	...	...	...	...	...	...	...	...	...	...	...	E by S.
1	0·2	...	...	1	0·1	...	...	...	...	...	...	ESE.
...	...	...	...	1	0·3	...	...	...	...	...	...	SE by E.
...	...	1	0·1	3	0·4	...	...	...	...	...	...	SE.
...	...	1	0·1	1	0·2	...	...	...	...	...	...	SE by S.
3	0·5	5	1·0	3	0·4	...	...	1	1·4	...	...	SSE.
...	...	5	3·6	2	2·0	2	0·9	...	...	...	...	S by E.
...	...	13	8·8	1	1·2	1	0·1	...	...	...	...	S.
2	0·7	5	3·7	1	1·2	2	2·5	3	0·4	3	0·6	S by W.
15	6·6	11	5·2	2	2·3	4	2·7	32	33·0	25	17·9	SSW.
17	11·1	17	8·8	2	1·0	11	5·2	5	1·8	19	20·0	SW by S.
45	41·0	24	12·0	14	6·3	32	19·3	31	19·8	90	91·1	SW.
9	4·5	6	3·2	6	1·6	16	7·3	4	4·6	1	2·6	SW by W.
8	4·4	6	1·6	5	1·2	17	5·9	8	6·5	18	13·3	WSW.
5	2·3	...	...	4	1·2	4	1·5	5	3·7	3	1·9	W by S.
9	5·2	3	1·1	8	2·6	8	7·2	5	5·2	10	19·3	W.
5	3·5	1	0·1	1	0·3	5	6·5	2	1·2	4	4·8	W by N.
...	...	2	0·3	1	0·1	5	4·2	4	9·9	...	...	WNW.
2	0·8	1	0·3	2	0·4	9	2·4	2	0·8	...	...	NW by W.
2	0·5	...	...	6	1·9	5	1·3	9	17·8	...	...	NW.
...	...	...	...	3	1·1	3	3·4	2	1·7	...	...	NW by N.
7	2·3	...	...	7	3·0	8	2·4	4	1·6	...	...	NNW.
2	0·3	...	...	9	8·1	3	4·7	3	0·9	...	...	N by W.

In forming the sums for January in Table XXIX., the following quantities, estimated from the four daily observations, were used as belonging to the first week in that month :—

Wind.	Times.	Sums of Pressure.	Wind.	Times.	Sums of Pressure.
		lb.			lb.
NNW.	1	0·2	W by S.	2	3·0
NW by W.	4	2·4	SW by W.	15	13·4
NW.	5	4·3	SSW.	5	3·2
W.	9	6·2			

Annual Variation of the number of times which the Wind blew, as deduced from the observations made at 9 two hourly intervals. The following are the sums of the times which the wind blew at the observation hours for each month, as obtained from Table XXIX. :—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
177	149	127	135	170	187	161	113	113	159	126	173

The number of times which the wind blows is a maximum in January, the number diminishes to March when it is a minimum, it increases to June when it is a maximum, diminishes again to August and September when it is a minimum, and increases till December when the number is nearly the same as in January. The only exception to the regularity of this increase and diminution is in November, in which month the number is less than in October. In the year 1843 *the wind blew most frequently at the solstices and most seldom at the equinoxes.* The range of the variation of the numbers is 74, or ⅖ of the greatest number, 187, that for June.

Annual Variation of the number of points of the compass in which the Wind blew.—The following are the number of points of the compass in which the wind blew for each month :—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
17	17	24	27	20	25	24	21	29	24	20	9

The wind, therefore, seems to be least variable at the Winter solstice, and more variable at the equinoxes than at the summer solstice.

Annual Variation of the sums of the Pressure of the Wind.—This, of course, is the same as has been already obtained, Table XXIV., for the means of the pressures ; or the maximum near the winter solstice, minima at the equinoxes, and a secondary maximum near the summer solstice. The sums, as obtained from Table XXIX., are as follow :—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
261·6	191·4	82·9	122·9	111·6	106·4	91·4	52·2	45·8	100·3	111·6	171·5

Annual Variation of the Mean Pressure of the Wind when blowing.—The means, Table XXIV., are the mean pressures throughout the 24 hours. The following means are obtained by dividing the sums of the pressures by the number of times which the wind blew :—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1·48	1·28	0·65	0·91	0·66	0·57	0·57	0·46	0·41	0·63	0·89	0·99

The mean pressure of the wind when blowing is a maximum in January and December ; it is a minimum in September. There is also a minimum in March, but it is not sufficiently marked to produce a distinct maximum near the summer solstice, as shewn by the *sums* of the pressures. From this the wind seems to blow with the greatest force near the coldest, and with the least force near the hottest period of the year. The range of the monthly means of the pressure of wind while blowing is 1·07 lb.

TABLE XXX.—Sums of the Pressures of Wind in Table XXIX., resolved for each Month and Quarter into the Four Cardinal Points of the Compass, together with the Value and Direction of the Resultant.

Period.	Resolved Sums in				Resultant.		
	N.	E.	S.	W.	Sums.	Means.	Directions.
	lb.	lb.	lb.	lb.	lb.	lb.	°
January	49·8	7·7	113·3	216·7	218·4	1·23	W. 17 S.
February	120·2	42·4	29·1	55·7	92·1	0·62	N. 8 W.
March	26·6	30·1	33·8	25·8	8·4	0·07	S. 31 E.
April	27·8	9·7	50·9	63·4	58·5	0·43	W. 23 S.
May	34·5	63·4	30·8	15·7	48·9	0·29	E. 4 N.
June	50·7	32·8	21·6	30·9	29·2	0·16	N. 4 E.
July	9·4	4·5	50·2	58·6	67·8	0·42	W. 37 S.
August	1·6	2·9	40·0	22·0	42·9	0·38	S. 26 W.
September	20·4	4·6	14·5	17·7	14·4	0·13	W. 24 N.
October	29·7	11·9	30·6	55·2	43·3	0·27	W. 1 S.
November	21·9	0·9	53·5	71·6	76·5	0·61	W. 24 S.
December	0·9	0·0	105·0	122·9	161·1	0·93	W. 40 S.
Mean Met. Qrs.							
Spring	88·9	103·2	115·5	104·9	26·7	0·06	S. 4 W.
Summer	61·7	40·2	111·8	111·5	87·1	0·19	W. 35 S.
Autumn	72·0	17·4	98·6	144·5	129·9	0·33	W. 12 S.
Winter	170·9	50·1	247·4	395·3	353·6	0·71	W. 13 S.
Astron. Qrs.							
Spring	174·6	82·2	113·8	144·9	87·3	0·21	W. 44 N.
Summer	94·6	100·7	102·6	105·2	9·2	0·02	S. 29 W.
Autumn	51·7	19·4	85·1	94·9	82·6	0·21	W. 24 S.
Winter	72·6	8·6	271·8	411·2	449·2	0·94	W. 26 S.
The Year	393·5	210·9	573·3	756·2	574·2	0·32	W. 18 S.

The mean resultants are obtained from the sum resultants in dividing the latter by the numbers of times which the wind blew.

Annual Variation of the Resultant Pressure of the Wind.—The resultant sums and means of pressures are the maximum in January and the minimum in March, a secondary minimum occurs in June, secondary maxima occurring in the months before and after it, and a minimum occurs in September, differing little in value from that for March; the resultant increases from thence till December. The quarterly periods for the astronomical group seem most regular. The resultant is nearly zero for the astronomical summer, it has about equal values in Spring and Autumn, and it is greatest in Winter.

The direction of the Resultant is between S. and W. seven months of the year, namely, in January, April, July, August, October, November, and December; it is between N. and W. two months, namely, in February and September; it is between N. and E. two months, namely, in May and June; and it is between S. and E. one month, namely, March.

The direction of the resultant wind for 1843 is W. 18° S.

TABLE XXXI.—Number of times which the Wind blew from each Point of the Compass at
foot of surface, together with

Wind blowing from	18^{h}.		20^{h}.		22^{h}.		0^{h}.		2^{h}.		4^{h}.	
	Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.
		lb.		lb.		lb.		lb.		lb.		lb.
N.	2	1·1	3	2·2	3	0·5	6	4·7	7	4·8	7	4·8
N by E.	3	5·4	3	2·6	3	3·2	3	4·4	2	0·4	2	2·3
NNE.	2	0·3	6	2·0	4	2·0	6	2·8	7	4·8	6	4·7
NE by N.	12	5·4	12	3·8	14	4·1	10	4·3	11	4·7	12	5·9
NE.	9	3·0	8	4·0	10	6·5	12	7·6	12	6·2	18	11·9
NE by E.	1	1·0	7	3·2	3	1·9	9	4·1	9	5·2	12	5·9
ENE.	5	4·5	5	3·2	8	5·9	9	6·0	16	12·2	10	6·9
E by N.	2	0·3	2	2·4	4	4·7	4	3·0	4	3·4	5	4·8
E.	3	3·4	1	0·2	2	1·2	2	0·9	2	1·1	4	3·0
E by S.	...	...	1	0·8	...	...	2	2·7	3	2·5	...	...
ESE.	...	...	...	...	1	0·5	...	...	...	...	2	0·3
SE by E.	...	...	...	...	...	...	...	...	1	0·3	...	...
SE.	2	3·2	2	3·2	1	0·1	1	0·5	2	1·3	1	0·2
SE by S.	...	...	...	...	3	3·5	...	...	1	0·8	2	0·4
SSE.	2	2·6	...	...	1	0·2	2	1·3	4	1·5	3	1·2
S by E.	1	0·4	3	2·1	7	3·7	7	7·3	3	4·2	3	2·2
S.	3	5·8	5	5·0	3	3·4	7	4·4	6	8·1	5	3·5
S by W.	1	1·4	4	2·0	3	2·9	3	2·0	6	5·7	7	5·1
SSW.	8	11·7	9	4·9	16	9·2	16	10·9	16	9·5	13	13·5
SW by S.	8	9·8	11	8·1	10	7·9	16	16·6	20	17·3	15	12·1
SW.	28	31·4	28	23·7	32	33·9	42	34·7	39	42·0	41	32·9
SW by W.	11	7·8	12	12·0	17	12·6	12	15·4	11	15·8	16	10·6
WSW.	9	9·4	12	6·2	11	7·9	12	4·8	12	8·8	12	8·4
W by S.	4	1·5	7	4·1	8	6·8	8	7·8	8	7·3	4	3·1
W.	6	2·3	7	12·3	8	9·3	7	16·4	9	14·2	11	15·9
W by N.	...	...	...	...	4	9·4	2	6·4	5	8·6	4	2·5
WNW.	3	10·2	2	4·3	3	2·7	2	2·3	5	2·4	7	11·5
NW by W.	3	6·4	1	6·0	2	0·5	4	2·6	3	3·3	3	2·0
NW.	2	1·4	5	2·1	6	4·6	11	15·7	3	4·2	1	0·5
NW by N.	1	6·8	2	1·0	4	7·7	3	6·4	4	6·4	4	1·4
NNW.	4	1·5	4	1·2	4	2·4	6	2·4	7	4·5	6	3·4
N by W.	3	2·0	4	10·6	10	11·8	9	12·5	8	12·2	6	12·0

each Observation Hour, with a Pressure of one-tenth of a pound or upwards upon a square
the *sums* of the Pressures.

6^{h}.		8^{h}.		10^{h}.		9 Observations.		12 Observations.		Mean Pressure.	Wind blowing from
Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.	Times.	Press.		
	lb.		lb.		lb.		lb.		lb.	lb.	
7	6·8	3	3·3	1	0·2	39	28·4	43	30·3	0·70	N.
3	1·8	4	3·4	2	1·9	25	25·4	32	36·3	1·13	N by E.
3	0·6	7	2·7	5	2·1	46	22·0	56	25·6	0·46	NNE.
13	6·1	7	2·3	9	3·7	100	40·3	131	53·9	0·41	NE by N.
21	9·2	19	7·9	8	3·5	117	59·8	142	69·5	0·49	NE.
7	2·7	5	1·7	2	0·8	55	26·5	59	29·2	0·50	NE by E.
9	6 8	9	2·8	4	1·3	75	49·6	88	58·3	0·66	ENE.
5	2·8	4	2·7	4	2·8	34	26·9	43	31·5	0·73	E by N.
3	0·9	1	0·5	...	...	18	11·2	23	16·3	0·71	E.
1	1·2	...	...	...	...	7	7·2	7	7·2	1·03	E by S.
...	...	...	...	1	0·1	4	0·9	5	1·0	0·20	ESE.
...	...	...	...	...	...	1	0·3	1	0·3	0·30	SE by E.
4	1·5	...	...	...	...	13	10·0	16	14·8	0·92	SE.
1	0·1	...	...	...	...	7	4·8	7	4·8	0·69	SE by S.
2	0·2	4	0·7	2	3·3	20	11·0	26	19·9	0·77	SSE.
3	1·7	3	1·6	4	4·2	34	27·4	42	34·3	0·82	S by E.
4	6·2	3	1·7	2	1·4	38	39·5	46	50·3	1·09	S.
2	0·6	2	1·2	...	...	28	20·9	30	23·0	0·77	S by W.
14	13·6	10	3·2	7	5·6	109	82·1	137	111·2	0·81	SSW.
12	7·0	11	10·8	5	11·4	118	101·0	152	132·8	0·87	SW by S.
40	32·3	33	34·7	31	27·4	314	293·0	403	381·2	0·95	SW.
15	13·3	10	8·0	4	3·8	108	99·3	149	131·6	0·88	SW by W.
10	5·3	10	2·8	8	4·0	96	57·6	122	77·7	0·64	WSW.
2	1·0	2	2·4	6	5·9	49	39·9	66	54·0	0·82	W by S.
8	5·7	6	7·0	5	2·3	67	85·4	95	100·0	1·05	W.
4	3·3	2	0·4	1	0·2	22	30·8	23	31·1	1·35	W by N.
6	8·1	...	...	2	3·5	30	45·0	38	65·5	1·72	WNW.
1	0·2	4	4·2	3	5·6	24	30·8	33	48·8	1·48	NW by W.
4	11·0	2	6·1	...	...	34	45·6	42	52·0	1·24	NW.
1	0·8	1	0·8	2	0·7	22	32·0	33	45·9	1·39	NW by N.
5	3·1	6	4·3	5	6·2	47	29·0	62	40·7	0·66	NNW.
2	1·4	3	1·4	3	1·9	48	65·8	57	71·7	1·26	N by W.

After the number of the times which the wind blew, and the sums of the pressures for the observation hours, the sums of the times blowing and pressures for all the 9 observations are given, and next the sums of the times blowing and pressures for 12 observations, three times the mean of the sums for 18^h and 10^h being taken as the sums for the three observations wanting to complete the day. The following quantities have also been made use of in forming the sums for 12 observations :—

Direction.	Times.	Sums of Pressures.	Direction.	Times.	Sums of Pressures.
		lb.			lb.
NNW.	1	0·2	W by S.	2	3·0
NW by N.	6	2·7	SW by W.	18	14·9
NW.	5	4·3	SSW.	5	3·2
W.	12	7·7			

These being estimated for the first week of January, and for the observation at 18^h, omitted in the second week.

Diurnal Variation of the number of the times which the Wind blew in 1843.—The following are the sums of the number of times which the wind blew, at each observation hour, with a pressure of one-tenth of a pound or upwards on a square foot of surface, as obtained from Table XXXI. :—

	$5^h\ 10^m$.	$7^h\ 10^m$.	$9^h\ 10^m$.	$11^h\ 10^m$ A.M.	$1^h\ 10^m$ P.M.	$3^h\ 10^m$.	$5^h\ 10^m$.	$7^h\ 10^m$.	$9^h\ 10^m$.
	138	166	205	233	256	242	212	171	126

Differences, 28 39 28 23 14 30 41 45

The number of times which the wind blew increased from $5^h\ 10^m$ A.M. till $1^h\ 30^m$ P.M., the interpolated period of maximum, and diminished from $1^h\ 30^m$ P.M. till $9^h\ 10^m$ P.M. The number increases most rapidly about 8^h A.M., and diminishes most rapidly about 8^h P.M. The wind, therefore, blew most frequently exactly at the time of the maximum temperature of the air.

Diurnal Variation of the number of Points of the Compass in which the Wind blew.—The numbers of the points of the compass in which the wind blew at the observation hours, are—

$5^h\ 10^m$.	$7^h\ 10^m$.	$9^h\ 10^m$.	$11^h\ 10^m$ A.M.	$1^h\ 10^m$ P.M.	$3^h\ 10^m$.	$5^h\ 10^m$.	$7^h\ 10^m$.	$9^h\ 10^m$.
27	27	30	29	31	30	30	26	25

The wind, therefore, seems to blow less steadily from 9 A.M. till 5 P.M. than before the former and after the latter of these hours.

Diurnal Variation of the Sums of Pressures of the Wind.—This, of course, is the same as that of the means, Table XXVII., or a maximum about 25^m after Noon. The sums are as follow :—

$5^h\ 10^m$.	$7^h\ 10^m$.	$9^h\ 10^m$.	$11^h\ 10^m$ A.M.	$1^h\ 10^m$ P.M.	$3^h\ 10^m$.	$5^h\ 10^m$.	$7^h\ 10^m$.	$9^h\ 10^m$.
lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
139·5	133·5	170·4	211·5	224·0	192·1	156·1	118·7	103·8

Diurnal Variation of the Mean Pressure of the Wind while blowing.—This is obtained by dividing the sums of the pressures by the number of times which the wind blew, and is as follows :—

$5^h\ 10^m$.	$7^h\ 10^m$.	$9^h\ 10^m$.	$11^h\ 10^m$ A.M.	$1^h\ 10^m$ P.M.	$3^h\ 10^m$.	$5^h\ 10^m$.	$7^h\ 10^m$.	$9^h\ 10^m$.
lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
1·01	0·80	0·83	0·91	0·88	0·79	0·74	0·69	0·82

The wind, while blowing, was a minimum about $7^h\ 40^m$ A.M.
.... maximum at Noon.
.... minimum about $7^h\ 10^m$ P.M.

The greatest force occurred at $5^h\ 10^m$ A.M.; the maximum pressure of the wind while blowing probably occurs, therefore, at or after midnight.

The fact that the wind blows with the greatest force at Noon, but the greatest number of times at $1^h\ 30^m$ P.M., the time of the maximum temperature, explains why the *sums* of the pressures attain their maximum between these two periods.

Times which the Wind blew from the different Points of the Compass.—The wind blew most frequently from the SW., and least so from SE. by E.; the number for the former, from 12 daily observations, being 403, and, for the latter, 1. If we take the sums of the times from 12 observations, for the five points SSW. to WSW., corresponding to SW., from WSW. to WNW., corresponding to W., and so for the others of the 8 principal points, we find that the number of times which the wind blew was the maximum at SW., a secondary minimum at NW., a secondary maximum at NE., and the minimum at SE. The sums are as follow :—

SW.	W.	NW.	N.	NE.	E.	SE.	S.
963	344	208	250	476	166	55	281

The wind blew twice as often from the points included between N., W., and S., as from the opposite semicircle N., E., and S.

Sums of the Pressures with which the Wind blew from the different Points of the Compass.—The greatest sum is that for SW., being, from 12 observations, 381 lb., and the least that for SE. by E., being 0·3 lb. Summing the pressures for each five points, including the 8 principal points as above, we have, for 12 observations,—

SW.	W.	NW.	N.	NE.	E.	SE.	S.
lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
834·5	328·3	252·9	204·6	236·5	114·3	40·8	238·7

The sums of the pressures are, therefore, greatest about SW.; they diminish round by W. and NW. to N., where there is a secondary minimum, a secondary maximum occurs about NE.; the sums then diminish to SE., about which they are the minimum, increasing from thence to SW.

Mean Pressure of the Wind while blowing from the different Points of the Compass.—The mean pressure of the wind was greatest while blowing from WNW., being 1·72 lb., and least while blowing from the opposite point ESE., being 0·20 lb. If the sums of the pressures about the 8 principal points be divided by the times which the wind blew about the same points, we obtain the following means :—

SW.	W.	NW.	N.	NE.	E.	SE.	S.
lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
0·87	0·95	1·22	0·82	0·50	0·69	0·74	0·85

The mean pressure with which the wind blows is therefore greatest about NW., it becomes less at the N., and is least at NE., from which point it increases gradually by SE., S., SW., and W., to the maximum at NW.

TABLE XXXII.—Sums of the Pressures of Wind in Table XXXI. resolved for each Hour into the Four Cardinal Points of the Compass, together with the Value and Direction of the Resultant.

Hour Göttingen Mean Time.	Resolved Sums in				Resultant.		
	N.	E.	S.	W.	Sums.	Means.	Directions.
	lb.	lb.	lb.	lb.	lb.	lb.	°
18^{h}	33·3	18·4	61·6	71·9	60·5	0·44	W. 28 S.
20^{h}	34·8	18·0	49·5	69·3	53·4	0·32	W. 16 S.
22^{h}	44·3	24·5	63·6	89·2	67·5	0·33	W. 17 S.
0^{h}	60·2	27·4	76·0	108·2	82·3	0·35	W. 11 S.
2^{h}	55·1	34·3	88·2	110·8	83·4	0·33	W. 23 S.
4^{h}	54·0	34·4	67·9	91·3	58·6	0·24	W. 14 S.
6^{h}	42·0	25·4	60·9	75·3	53·4	0·25	W. 21 S.
8^{h}	31·9	16·3	47·6	61·0	47·4	0·28	W. 19 S.
10^{h}	23·6	12·6	47·4	54·1	47·8	0·38	W. 30 S.
Sum of 9 Obs.	378·7	211·0	562·2	730·4	550·9	0·32	W. 19 S.
Sum of 12 Obs.	469·2	257·1	737·5	948·1	741·3	0·34	W. 21 S.

The mean resultants are obtained on dividing the sum resultants by the number of times which the wind blew.

Diurnal Variation of the Resolved and Resultant Pressures of the Wind.—The sums resolved in the E. attain their maximum latest in the day, about 2ʰ P.M; the sums resolved in the W. attain their maximum earliest, about Noon; while the sums resolved in N. and in S. attain their maximum about 1ʰ P.M. The resultant sums of pressures attain their maximum about 0ʰ 30ᵐ P.M., minima occur about 7ʰ A.M. and 8ʰ P.M. The mean resultant attains a maximum about Noon, the minimum occurs about 3ʰ 40ᵐ P.M.; the maximum probably occurs near midnight, a secondary minimum occurs about 7ʰ A.M.

The Direction of the Resultant seems to have a diurnal variation, being more towards the south of west in the morning and evening than about mid-day.

TABLE XXXIII.—Differences of the Directions of Motions of the Lower and Upper Currents of Air, as deduced from the Comparisons of the Direction of the Wind and Motions of the Clouds.

Currents.	Quadrant N. to E.			Quadrant E. to S.			Quadrant S. to W.			Quadrant W. to N.		
	No. of Obs.	Diffs. of Motion.	Mean Diff.	No. of Obs.	Diffs. of Motion.	Mean Diff.	No. of Obs.	Diffs. of Motion.	Mean Diff.	No. of Obs.	Diffs. of Motion.	Mean Diff.
		°	°		°	°		°	°		°	°
Scud *minus* Wind	75	+27·9	+ 7·4	22	+ 29·3	+ 9·5	177	+23·7	+19·0	44	+18·5	+ 3·7
	30	−44·2		7	− 53·0		20	−22·6		18	−32·3	
Cir.-str. *minus* Wind	15	+48·3	− 1·9	12	+ 50·0	+33·2	87	+47·6	+35·4	23	+26·8	+ 1·7
	14	−55·7		2	− 67·5		12	−23·7		12	−46·6	
Cir.-str. *minus* Scud	14	+41·8	+ 5·6	7	+ 11·9	+ 3·6	57	+34·5	+23·9	28	+20·3	− 8·4
	9	−50·6		2	− 25·3		14	−19·7		19	−50·7	
Cirri *minus* Wind	8	+66·4	+13·4	3	+ 82·5	+82·5	42	+46·7	+34·5	10	+23·9	− 1·0
	6	−57·2		0	....		7	−38·6		5	−50·6	
Cirri *minus* Scud	7	+33·7	+21·3	1	+ 67·5	−45·0	22	+32·7	+20·1	16	+19·8	−15·9
	2	−25·0		1	−157·5		5	−35·6		8	−87·2	

This Table has been formed by taking the differences of the motions of the surface wind as observed on the anemoscope and the motions of the clouds. In order to arrive at any definite result, it was necessary to group the comparisons into quadrants of the compass. In several quadrants there are still too few comparisons to give satisfactory results.

The first column under each quadrant contains the number of times which an upper current was observed to proceed from a point *plus*, and the number of times which it was observed to proceed from a point *minus*, the direction of a lower current, from N. to E., S. and W. being the direction of reckoning. The second column under each quadrant contains the mean of the positive differences, and also the mean of the negative differences; the third column contains the mean difference of the motions from *all* the observations. Taking the first case for an example—the wind blowing *from* a point between N. and E. the scud was observed on 75 occasions to be moving from a point on an *average* of 27°·9 *south* of the point from which the wind was blowing; and on 30 occasions from a point on an average 44°·2 *north* of the point from which the wind was blowing. From *all* the 105 observations, the scud was found to move from a point 7°·4 south of that from which the wind blew.

In every quadrant, the upper currents were observed more frequently to be moving from points *plus* than from points *minus* those of the lower currents. In every quadrant, however, excepting S. to W., the average difference (with two exceptions) is greater for the *minus* than for the *positive* observations. In the quadrant S. to W. this is not the case: not only are the number of observations greatest for the upper current *positive* of the lower current, but the average difference of motion is also greatest (with one exception) when the upper current is positive of the lower. If we take the mean difference from all the observations we arrive at the following results :—

The direction of the scuds or current immediately above the surface wind is always *plus*, reckoning from N. to E., S., and W., that of the surface wind, the average difference is greatest in the quadrant between S. and W.; in this quadrant the scud is, on the average of 197 comparisons, 19° more westerly than the surface current. The difference is least in the quadrant W. to N., where the scud, on an average of 62 comparisons, is only 3°·7 more northerly than the surface current.

The direction of the cirro-strati, or current immediately above the scuds, differs most from the motion of the surface wind in the quadrant from S. to W., being, on the average of 99 comparisons, 39°·4 more westerly than the surface wind, or nearly twice the deviation of the scud. The difference in the quadrant E. to S. is also positive, being 36°·9 on an average of 14 comparisons. In the other two quadrants the difference is very small.

The direction of the cirri, or current immediately above the cirro-strati, differs most from the motion of the surface wind in the quadrant E. to S., but there are only 3 comparisons. The difference in the quadrant S. to W. is nearly the same as for the cirro-strati; there is reason to believe, indeed, that, on many occasions, the two species are confounded, as the cirri frequently pass into cirro-strati.

The mean differences of the *mean* motion of the three currents, scud, cirro-strati, and cirri, from the motion of the surface wind, are as follow :—

N. to E., 147 comparisons; *mean* upper current *minus* surface current = + 6°·2
E. to S., 46 .... = + 23·2
S. to W., 345 .... = + 27·6
W. to N., 112 .... = + 2·5

The difference of the directions of motion of the surface and *mean* upper current is therefore a minimum in the quadrant from W. to N.; the mean upper current is half-a-point S. of the surface current in the quadrant N. to E.; two points S. of the surface current in the quadrant E. to S.; and about two points and a half N. of the surface current in the quadrant S. to W.

If all the cases be taken in which the motions of the upper currents of cirro-strati and cirri were observed simultaneously with the current of scud, we obtain the following differences of motion of the mean upper current (cirro-strati and cirri), and lower current of clouds :—

N. to E., 32 comparisons; cirro-stratus current *minus* scud current = + 11°·1
E. to S., 11 .... = − 5·8
S. to W., 98 .... = + 25·4
W. to N., 71 .... = − 12·2

The numbers of comparisons in the first two quadrants are too few for a good mean; from the other it appears that the current of cirro-stratus in the quadrant S. to W. is more than two points north of the current of scud; but, in the quadrant W. to N., it is about one point south of the scud.

If the mean differences of motion, scud *minus* wind, and cirro-stratus *minus* wind, were well determined, it is evident that, in subtracting the former from the latter, we would obtain the differences, cirro-stratus *minus* scud; and similarly for the differences cirri *minus* scud.

The means for these two differences, thus obtained, are—

N. to E., cirro-stratus and cirrus current *minus* scud current = − 2°·0
E. to S., ... = + 54·7
S. to W., ... = + 19·7
W. to N., ... = − 3·3

As before, the difference for the quadrant E. to S. depends on too few observations, which is indeed the case with all the quadrants excepting that of S. to W.

TABLE XXXIV.—Daily, Weekly, and Monthly Means of the estimated surface of the Clouds, the whole sky covered being 10·0.

Civil Day.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	[···]	3·8	4·4	10·0	2·2	10·0	8·2	10·0	8·4	[7·8]	6·3	3·2
2	4·1	6·5	9·2	[7·7]	4·2	10·0	[7·8]	8·9	7·8	4·7	7·9	5·7
3	10·0	4·8	7·6	6·2	4·0	10·0	6·2	7·5	[6·2]	9·6	5·5	[6·4]
4	4·3	7·1	0·9	8·9	5·8	[9·9]	4·8	8·5	2·9	9·4	6·8	9·6
5	2·5	[7·2]	[5·3]	7·4	4·5	10·0	10·0	4·6	2·7	9·5	[5·8]	7·2
6	9·9	5·1	9·0	9·9	7·9	10·0	7·4	[7·7]	6·8	9·6	6·6	4·0
7	7·1	9·9	5·4	5·0	[6·6]	9·5	9·3	9·7	1·1	6·7	5·1	8·3
8	[6·1]	10·0	0·0	7·7	9·6	7·7	7·8	9·9	0·9	[9·2]	2·9	4·4
9	7·7	9·7	4·6	[7·0]	6·7	9·9	[8·1]	6·0	0·8	9·7	5·8	7·8
10	6·1	8·0	7·0	5·9	4·9	7·5	8·8	2·7	[3·6]	9·9	10·0	[7·8]
11	3·3	10·0	10·0	4·7	4·7	[8·3]	5·2	8·5	9·1	10·0	9·6	7·6
12	2·7	[6·8]	[6·5]	8·8	10·0	10·0	9·9	1·9	7·9	5·8	[7·2]	9·2
13	10·0	4·8	7·2	7·1	10·0	9·9	6·5	[5·6]	1·8	2·2	5·4	9·7
14	5·8	4·0	4·2	9·5	[9·1]	4·6	4·7	3·3	7·2	1·5	5·1	7·0
15	[7·1]	4·2	6·2	9·4	10·0	0·5	4·7	9·6	4·4	[4·0]	7·6	7·0
16	5·5	5·3	10·0	[8·3]	10·0	4·8	[6·9]	7·6	3·7	5·5	6·5	4·0
17	9·3	5·5	9·9	7·3	9·9	6·1	10·0	6·6	[5·8]	7·8	5·7	[7·9]
18	9·4	3·1	9·0	8·5	7·4	[5·8]	7·1	5·6	7·7	1·1	1·8	9·7
19	8·8	[7·3]	[9·3]	8·1	6·9	9·5	8·4	3·9	6·3	2·1	[5·6]	10·0
20	6·9	10·0	9·6	8·6	8·3	7·9	9·4	[5·5]	5·5	8·6	8·2	9·6
21	4·8	10·0	9·5	9·2	[8·8]	6·2	7·1	6·5	4·3	6·5	7·1	2·9
22	[7·0]	10·0	8·0	10·0	10·0	5·3	9·7	8·9	0·1	[5·2]	4·1	7·1
23	6·5	10·0	7·8	[7·9]	10·0	5·4	[8·6]	1·3	0·3	6·0	5·9	7·8
24	5·9	9·9	10·0	6·3	10·0	2·9	8·4	3·8	[4·8]	6·6	4·3	[6·5]
25	9·2	9·9	5·0	7·9	9·5	[6·5]	7·1	6·0	8·1	1·4	7·2	8·6
26	6·3	[8·3]	[6·7]	5·2	7·8	8·7	10·0	5·1	9·2	1·4	[5·3]	7·2
27	9·3	9·1	10·0	6·1	10·0	8·3	5·6	[5·1]	6·8	4·9	6·3	5·3
28	3·0	6·5	6·7	7·7	[9·0]	8·6	9·9	9·2	5·9	9·5	7·9	5·8
29	[5·1]		1·0	8·9	7·4	8·1	9·5	1·9	8·2	[5·5]	0·4	8·2
30	1·5		6·6	[5·5]	9·5	9·3	[8·8]	4·5	8·9	9·0	8·6	3·5
31	6·5		7·0		10·0		8·8	8·9		2·1		[5·4]
Mean	6·40	7·38	6·88	7·77	7·82	7·72	7·87	6·33	5·26	6·20	6·10	6·94

The daily means in this table have been obtained from the 9 two-hourly observations by the formula given for the temperature, Table I. The daily means in the first week of January are the means of the 4 three-hourly observations.

Annual Variation of the Surface of Cloud.—The surface of cloud is a minimum in January, the maximum in April, May, June, and July, the means for which four months differ little from each other; the minimum surface occurs in September, after which the surface increases till December. The following are the means for the three groups of seasons, namely,—

The mean meteorological seasons, for which June, July, and August, constitute Summer.
The meteorological seasons for 1843, for which July, August, and September, ...
The astronomical seasons, for which May, June, and July, ...

Seasons.	Mean Meteorological.	Meteorological for 1843.	Astronomical.
Spring,	7·49	7·77	7·34
Summer,	7·31	6·49	7·80
Autumn,	5·85	6·41	5·93
Winter,	6·91	6·89	6·48
Range of Means,	1·64	1·36	1·87

The astronomical group is the most distinct. The maximum occurs in summer and the minimum in autumn of that group. The greatest monthly mean is that for July, being 7·87; the least is that for September, being 5·26.

The mean for the year 1843 = 6·89.

TABLE XXXV.—Estimated Surface of Cloud, with reference to the Moon's Age and Declination.

Moon's Age.	No. of Days.	Surface of Cloud.	Moon's Age.	No. of Days.	Surface of Cloud.	After Moon farthest North.	No. of Days.	Surface of Cloud.	After Moon farthest North.	No. of Days.	Surface of Cloud.
15	9	6·9	0	12	5·4	0	11	7·0	14	11	7·7
16	11	6·6	1	10	7·4	1	12	7·1	15	12	7·2
17	10	6·8	2	11	6·8	2	9	7·9	16	9	6·3
18	11	7·3	3	9	6·1	3	11	6·3	17	11	7·0
19	10	7·0	4	11	6·5	4	12	6·9	18	12	6·2
20	9	7·3	5	10	7·8	5	11	6·4	19	11	5·3
21	12	6·9	6	9	6·8	6	12	6·5	20	12	6·5
22	9	7·5	7	12	7·1	7	11	6·9	21	11	6·7
23	11	7·8	8	10	6·6	8	12	6·5	22	12	6·5
24	10	7·2	9	11	7·2	9	9	7·2	23	9	8·0
25	11	6·7	10	9	7·4	10	11	8·2	24	11	7·4
26	10	6·5	11	11	6·6	11	12	8·2	25	12	6·7
27	9	6·8	12	10	7·0	12	11	7·5	26	11	5·2
28	11	6·7	13	9	7·5	13	12	7·5	27	11	5·8
29	9	6·5	14	12	6·4						

This Table has been formed from Table XXXIV. in the manner already indicated, Table X.

Surface of Cloud, with reference to the Moon's Age.—The following means of groups indicate that the surface of cloud is a minimum about new moon :—

12 days till 18 days, Full Moon,	6·9	27 days till 3 days, New Moon,	6·5
15 ...... 22 ...	7·0	0 ...... 7 ...	6·7
19 ...... 26 ...	7·1	4 ...... 11 ...	7·0
23 ...... 29 ...	6·9	8 ...... 14 ...	7·0

There is an appearance of a secondary minimum at full moon, but the differences of the means are very small.*

Surface of Cloud, with reference to the Moon's Declination.—The following means of groups seem to indicate that the surface of cloud is greatest a few days before the moon is farthest south, and least a few days before it is farthest north :—

25 days till 3 days, Moon farthest North,	6·6	11 days till 17 days, Moon farthest South,	7·3
0 ...... 6 ...	6·9	14 ...... 20 ...	6·6
4 ...... 10 ...	6·9	18 ...... 24 ...	6·7
7 ...... 13 ...	7·4	21 ...... 27 ...	6·6

Extremes of the Daily Mean Surface of Clouds for each Month, with the ranges of the monthly means, and number of days in each month wholly overcast :—

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Greatest,	10·0	10·0	10·0	10·0	10·0	10·0	10·0	10·0	9·2	10·0	10·0	10·0
Least,	1·5	3·1	0·0	4·7	2·2	0·5	4·7	1·3	0·1	1·1	0·4	2·9
Range,	8·5	6·9	10·0	5·3	7·8	9·5	5·3	8·7	9·1	8·9	9·6	7·1
No. of Days Overcast,	2	6	3	2	9	6	3	1	0	1	1	1

The surface of clouds was 10·0 on nine days in the month of May, and in the month of September no day was quite overcast. Only on one day was the sky perfectly free of clouds, namely, on the 8th of March ; on the 22d and 23d of September the amount was very small.

---

* If the heat from the Moon have any effect on the dissipation or formation of clouds, it is obvious that the effect will be greatest during the night, when the Moon is about full ; the want of observations from 9^h P.M. till 5^h A.M. would therefore vitiate the results more markedly than in previous cases investigated, where any effect of the Moon must be supposed sufficiently permanent to affect the means during the day as well as the night.

TABLE XXXVI.—Means of the Estimated Surface of Cloud at the Hours of Observation, for each Month and Quarter in 1843.

Period.	18^h.	20^h.	22^h.	0^h.	2^h.	4^h.	6^h.	8^h.	10^h.	Mean.	Range.
January	5·53	7·35	7·69	8·02	6·98	7·75	7·28	5·20	5·15	6·41	2·87
February	6·97	7·80	7·05	7·76	7·95	8·17	7·78	6·40	7·42	7·41	1·77
March	6·56	7·37	7·33	7·03	7·28	7·27	7·33	6·82	6·06	6·83	1·31
April	7·08	7·45	8·61	8·84	9·10	8·90	9·02	7·41	6·40	7·75	2·70
May	7·86	8·40	8·01	8·14	8·06	7·83	7·14	7·51	7·60	7·81	1·26
June	8·59	8·50	8·26	7·62	7·40	7·38	7·40	6·36	7·01	7·66	2·23
July	7·68	8·29	9·01	9·48	8·21	7·53	7·96	7·28	6·82	7·83	2·66
August	6·44	6·20	5·37	6·66	6·95	6·74	6·87	6·53	5·67	6·30	1·58
September	6·12	6·22	4·57	4·95	5·10	4·88	5·11	4·88	4·58	5·20	1·65
October	5·83	6·35	6·36	6·71	7·36	6·83	6·42	5·56	5·65	6·19	1·80
November	5·90	7·16	6·53	6·63	6·72	5·92	5·79	5·84	5·46	6·08	1·70
December	6·47	6·87	8·00	8·20	7·62	7·29	6·01	6·77	6·73	6·98	2·19
Spring	7·17	7·74	7·98	8·00	8·15	8·00	7·83	7·25	6·69	7·46	1·46
Summer	7·57	7·66	7·55	7·92	7·52	7·22	7·41	6·72	6·50	7·26	1·42
Autumn	5·95	6·58	5·82	6·10	6·39	5·88	5·77	5·43	5·23	5·82	1·35
Winter	6·32	7·34	7·58	7·99	7·52	7·74	7·02	6·12	6·43	6·93	1·87
The Year	6·75	7·33	7·23	7·50	7·39	7·21	7·01	6·38	6·21	6·87	1·29

The observations in the first week of January were not made use of in obtaining the hourly means for that month; no observations having been made at 18^h in the second week, a correction was applied to the mean for that hour of $-0·48$, obtained from Table XXXIV. as follows:—

{Mean cloud, Jan. 9–31, = 6·63, *minus* mean cloud, Jan. 16–31, = 7·11} = $-$ 0·48.

The means were afterwards corrected by $+0·30$, in order to render the mean for that month from these means equal to that obtained, Table XXXIV., from all the daily means.

Diurnal Variation of the Surface of Cloud.—The means for the various months present considerable irregularities, the maximum surface of cloud, however, occurs, with two or three exceptions, between 11 A.M. and 3 P.M. The following are the interpolated periods of the maximum surface of cloud for each of the mean meteorological seasons (as in the previous Table):—

Spring, the max., 1^h 0^m P.M.
Summer, ... 10^h 0^m A.M.
Autumn, ... 7^h 0^m A.M.; a Secondary min. about 9^h 30^m A.M.; a Secondary max. 1^h P.M.
Winter, ... 11^h 0^m A.M.; .... 1^h 0^m P.M.; .... 3^h P.M.

There are other secondary maxima and minima, but they are probably accidental.

The periods for the astronomical group of seasons are as follow:—

Spring, the max., 3^h P.M.
Summer, ... 9^h A.M.
Autumn, ... 2^h P.M.; a Secondary min. 9^h A.M.; a Secondary max. 6^h A.M.
Winter, ... 11^h A.M.

The secondary minimum and maximum are well marked for autumn of this group; there are also inflexions or minima in the summer and autumn about 3^h P.M., the time at which inflexions occur in the curves for the aqueous vapour (Table XI.) From the astronomical group, the maximum surface of cloud seems to occur after noon in the spring and autumn, and before noon in the summer and winter. The minimum occurs after 9^h P.M.

The maximum in the means for the year occurs shortly before noon; a secondary maximum is shewn about 7^h A.M.; and a secondary minimum about 9^h A.M.

The Diurnal Range of the Surface of Cloud, as far as it can be deduced from the 9 two-hourly means, is a minimum in autumn and a maximum in winter.

TABLE XXXVII.—Quantity of Rain for each Month in 1843, by the Observatory Garden and Greenhouse Gauges.

Month.	Observatory Gauge.	Garden Gauge.	Greenhouse Gauge.
	in.	in.	in.
January	1·978	2·00	0·84
February	1·926	1·95 ?	0·95
March	0·934	0·95	0·70
April	2·231	1·95	1·63
May	3·237	3·17	2·53
June	1·311	1·24	1·09
July	2·676	2·47	2·26
August	2·752	2·51	2·36
September	1·080	1·00	0·86
October	3·645	3·73	3·19
November	2·038	1·82	1·45
December	0·949	0·66	0·49
Sums,	24·757	23·45	18·35

The quantity of rain for February, in the garden gauge, is estimated, the register for that month having been lost.

The greatest quantity of rain in any month is that for October, being, by the Observatory gauge, 3·645 in. The least monthly quantity is that for March, being, by the same gauge, 0·934 in. The quantity of rain is a minimum in the solstitial and equinoctial months of 1843, maxima occurring in the intervening months.

No conclusions can be drawn as to the cause of the differences of the sums for the Observatory and Garden gauges, as the gauges are not only at unequal heights above the level of the sea, but also above the soil.

The results for the Greenhouse gauge shew, that such a position is sufficient to destroy the value of the instrument as a pluviometer. (See *Introduction*, page lviii.)

The greatest amounts of rain found in the Observatory gauge at noon, having fallen within the previous 24 hours, for each month are as follow:—

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
0·650	0·387	0·290	0·468	0·403	0·420	0·386	1·411	0·252	0·890	0·460	0·253

The numbers of days in each month on which more than one-thousandth, one-hundredth, and one-tenth of an inch of rain was found in the Observatory gauge, are as follow:—

More than	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
0·001	23	22	16	19	23	16	22	19	12	30	27	17
0·010	14	17	11	13	17	10	14	15	6	19	16	7
0·100	6	6	3	9	11	7	8	8	2	10	6	2

The variation of the numbers follows nearly the same law as the variations of the monthly sums of rain fallen. In 1843, more than one-thousandth of an inch of rain fell on 246 days, or on about 6 days out of 9; more than one-tenth of an inch fell on 159 days, or on about 4 days out of 9; more than one-tenth of an inch fell on 78 days, or on about 2 days out of 9.

In dividing the monthly sums of rain by the number of days on which more than 0·001 inch fell, we obtain the following means for the quantity of rain which fell on days in which more than 0·001 was found in the Observatory gauge:—

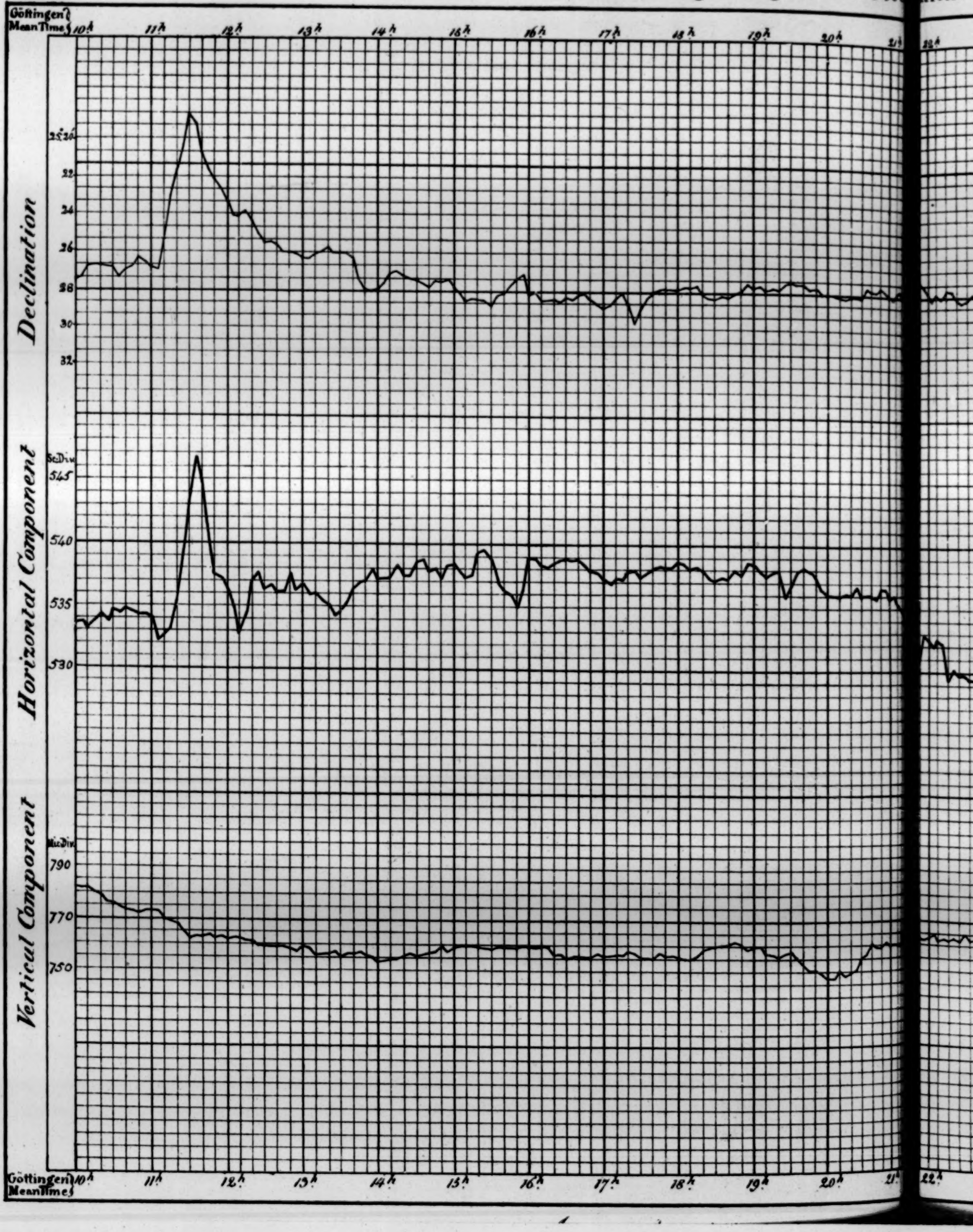
Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
0·086	0·088	0·058	0·117	0·141	0·082	0·122	0·145	0·090	0·121	0·113	0·056

These quantities follow nearly the same law as the monthly sums. We may therefore conclude, that for those months which have the greatest number of rainy days, the mean daily fall of rain is greatest; or, that the oftener it rains, it rains the heavier.

PRINTED BY NEILL AND COMPANY, EDINBURGH.

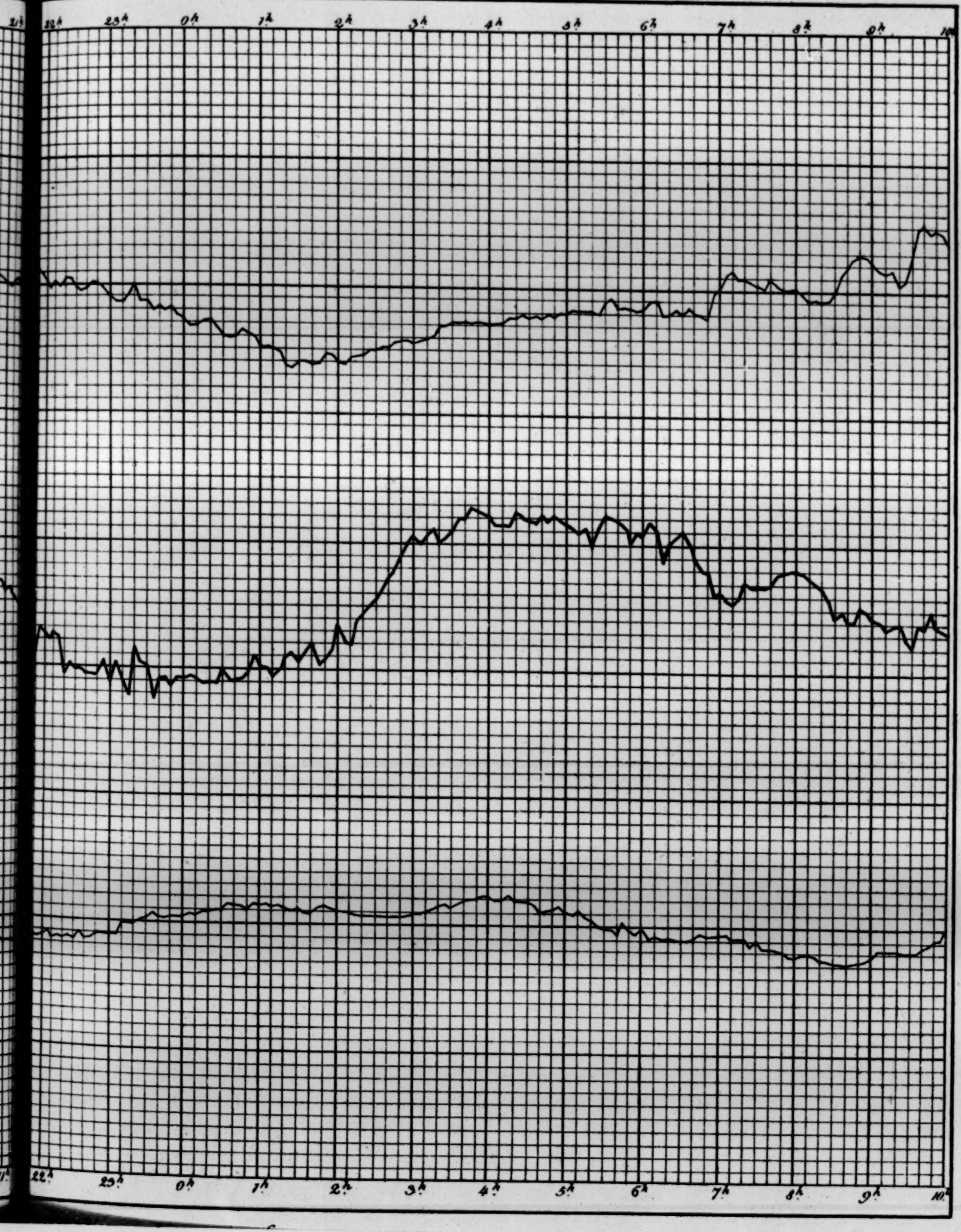
BRITISH MUSEUM.

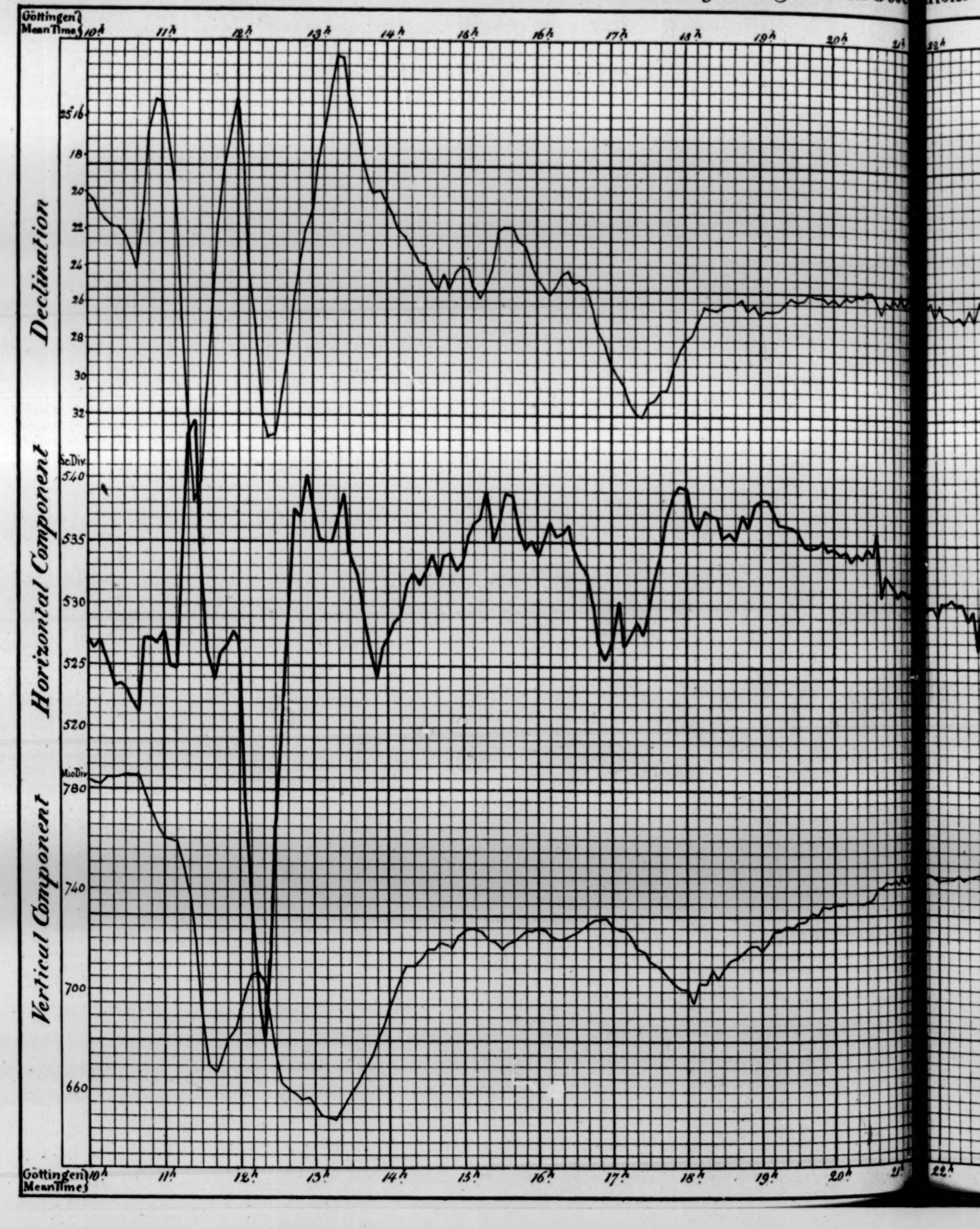
Term-Day Magnetical Obs tions



Obs tions January 18, 19, 1843.

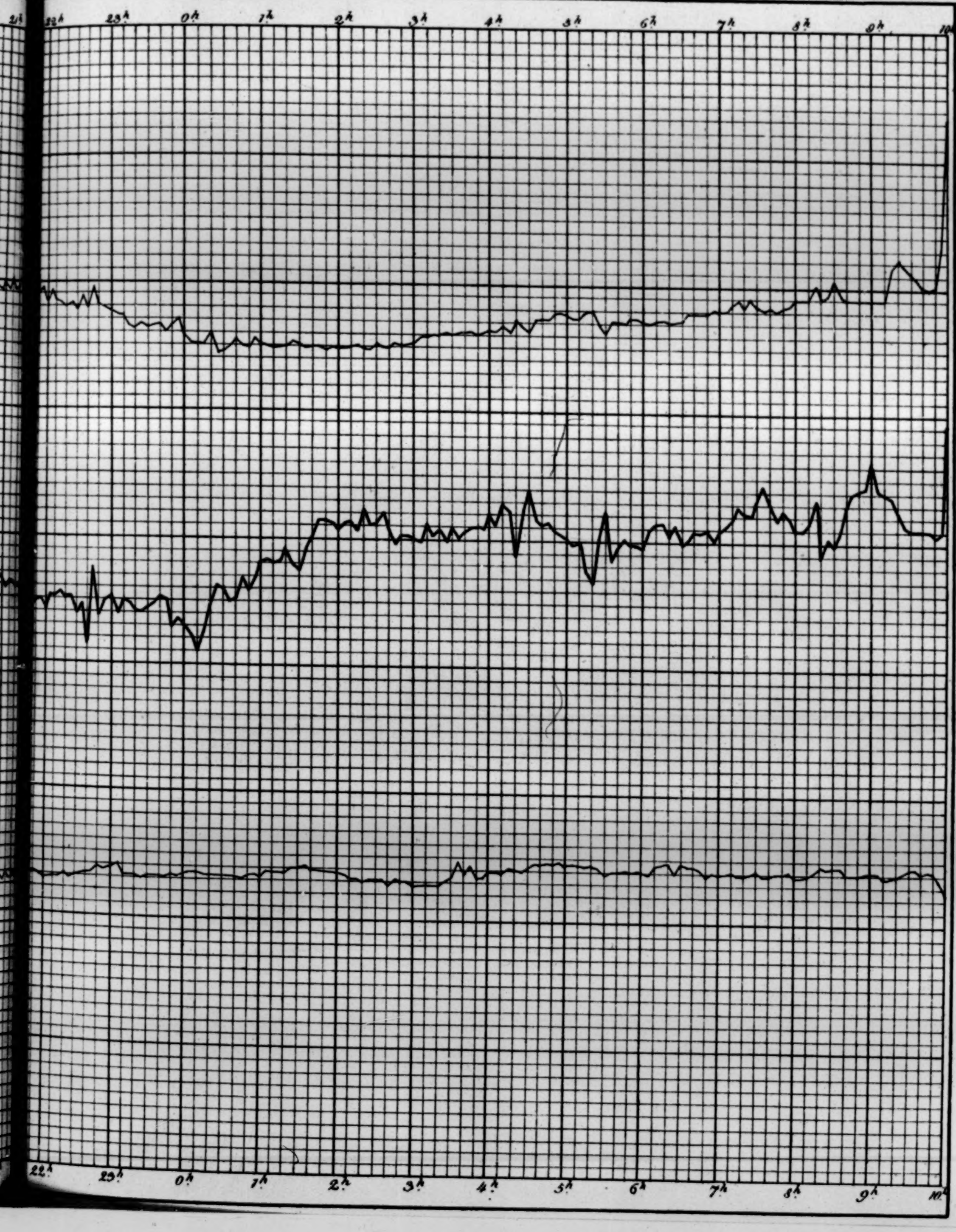
Plate II.

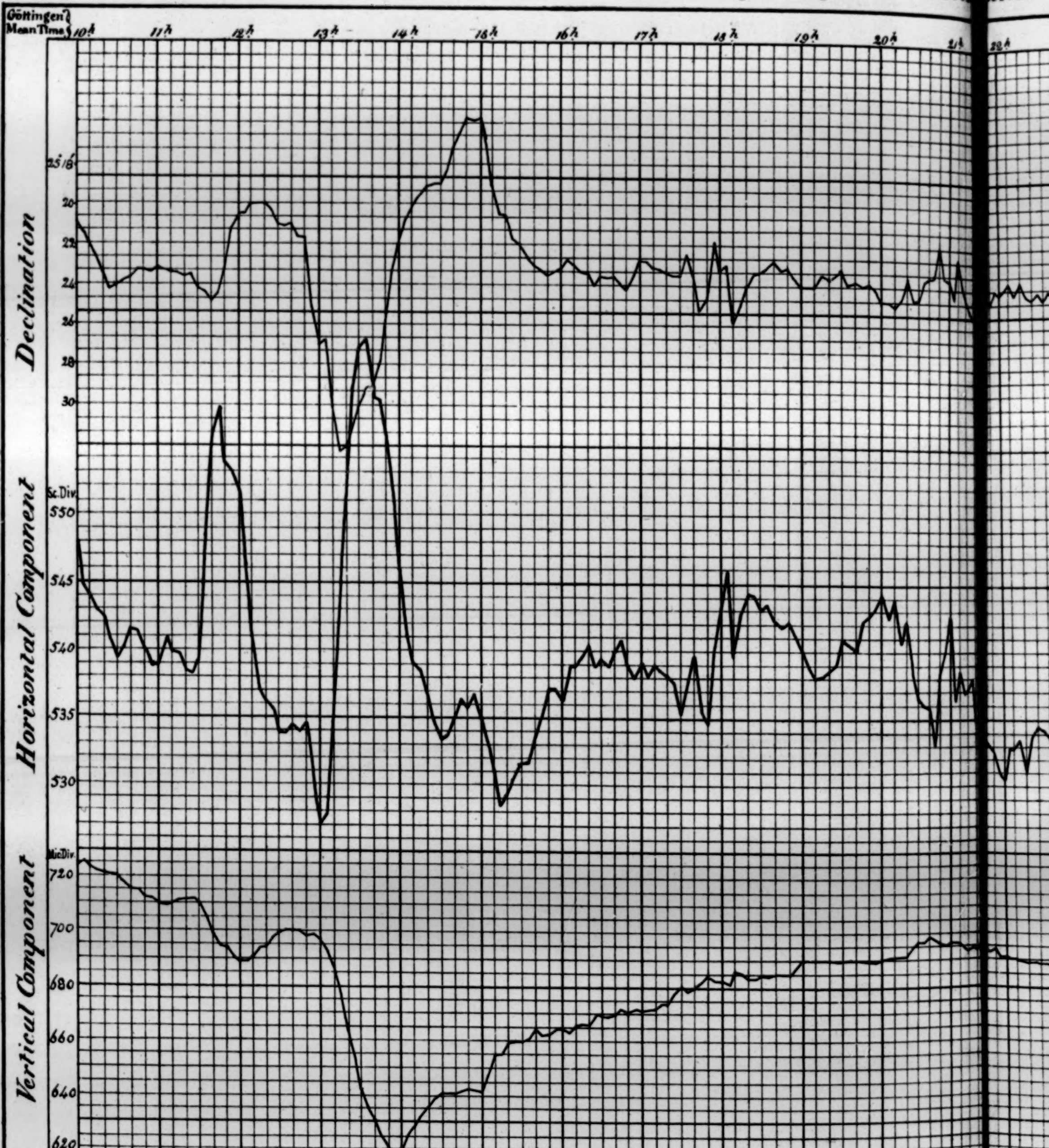



Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h
Declination
25° 16
18
20
22
24
26
28
30
32
Horizontal Component
Sc.Div.
540
535
530
525
520
Vertical Component
Mic.Div.
780
740
700
660
Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h

Obse tions February 24, 25. 1843

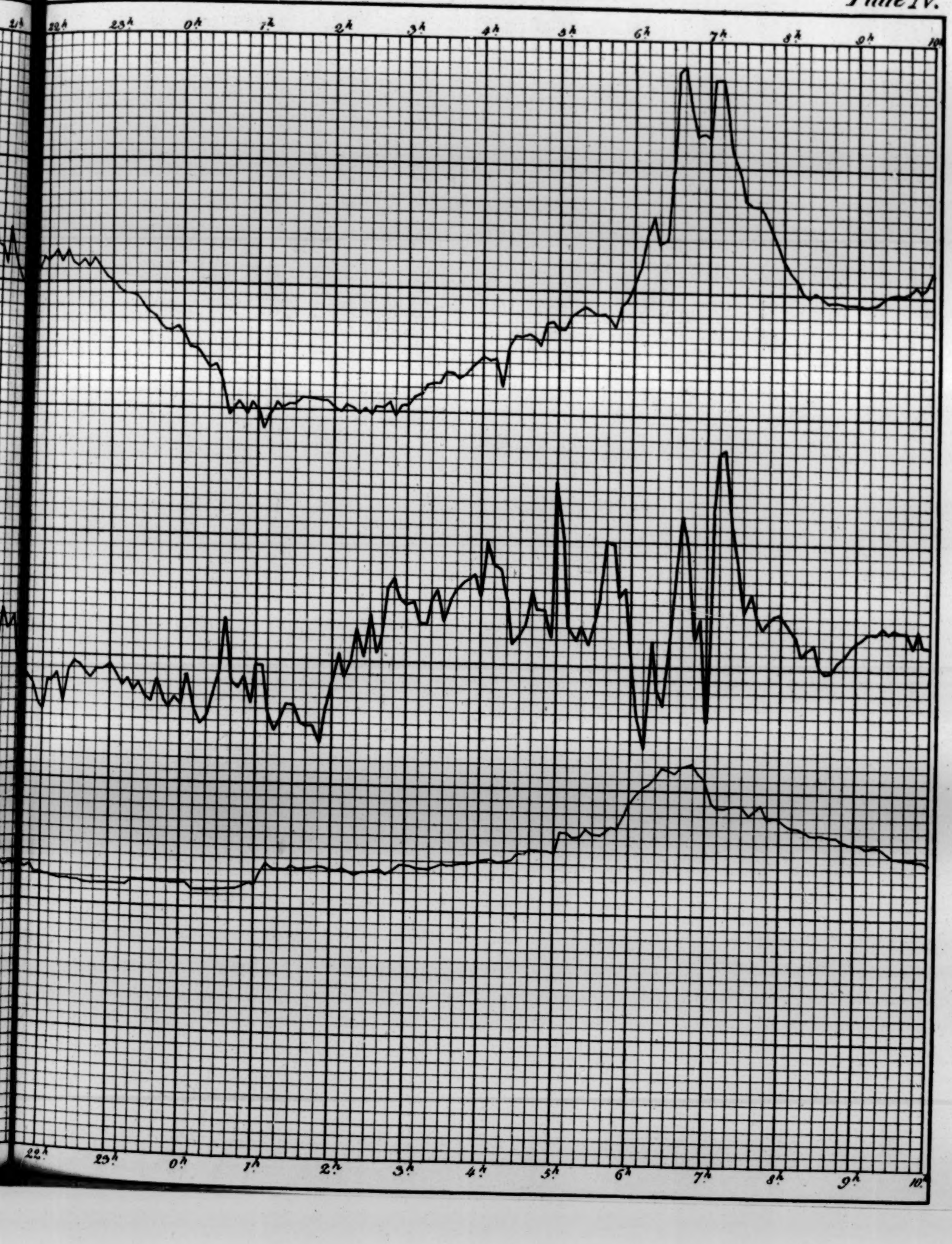
Plate III

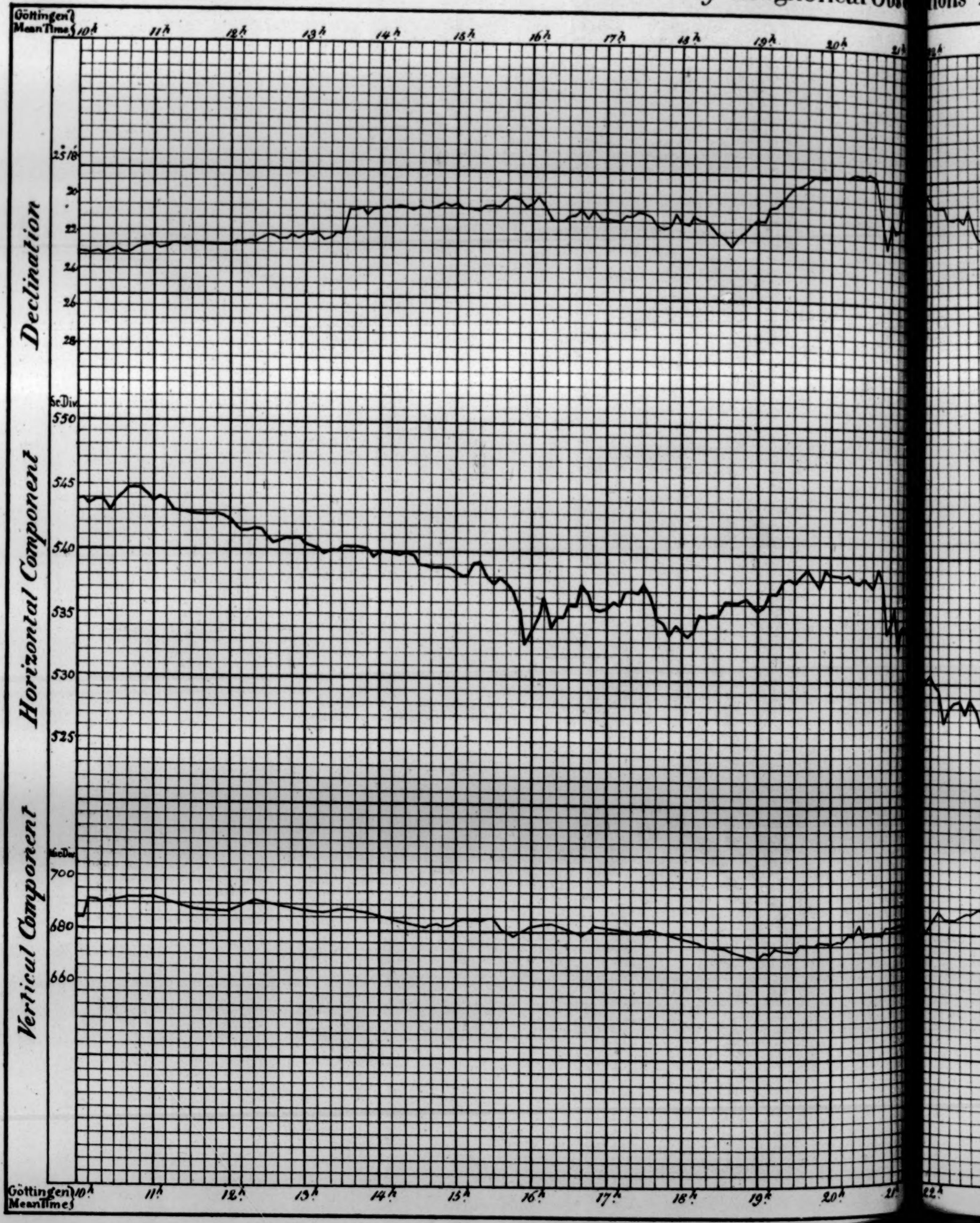



Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h
Declination
25°16'
20
22
24
26
28
30
Horizontal Component
Sc.Div.
550
545
540
535
530
Vertical Component
Mic.Div.
720
700
680
660
640
620

Obse tions March 22, 23. 1843

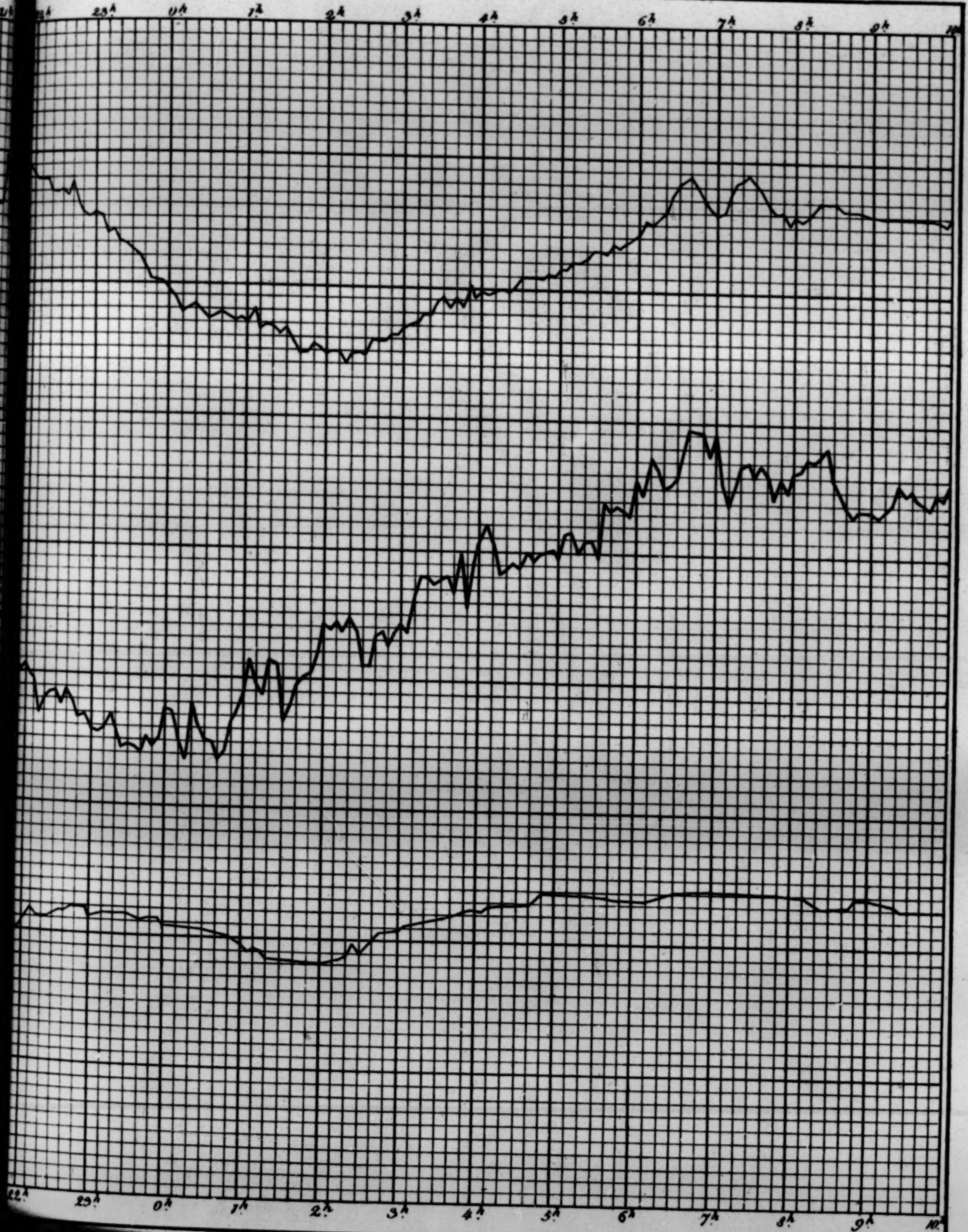
Plate IV.



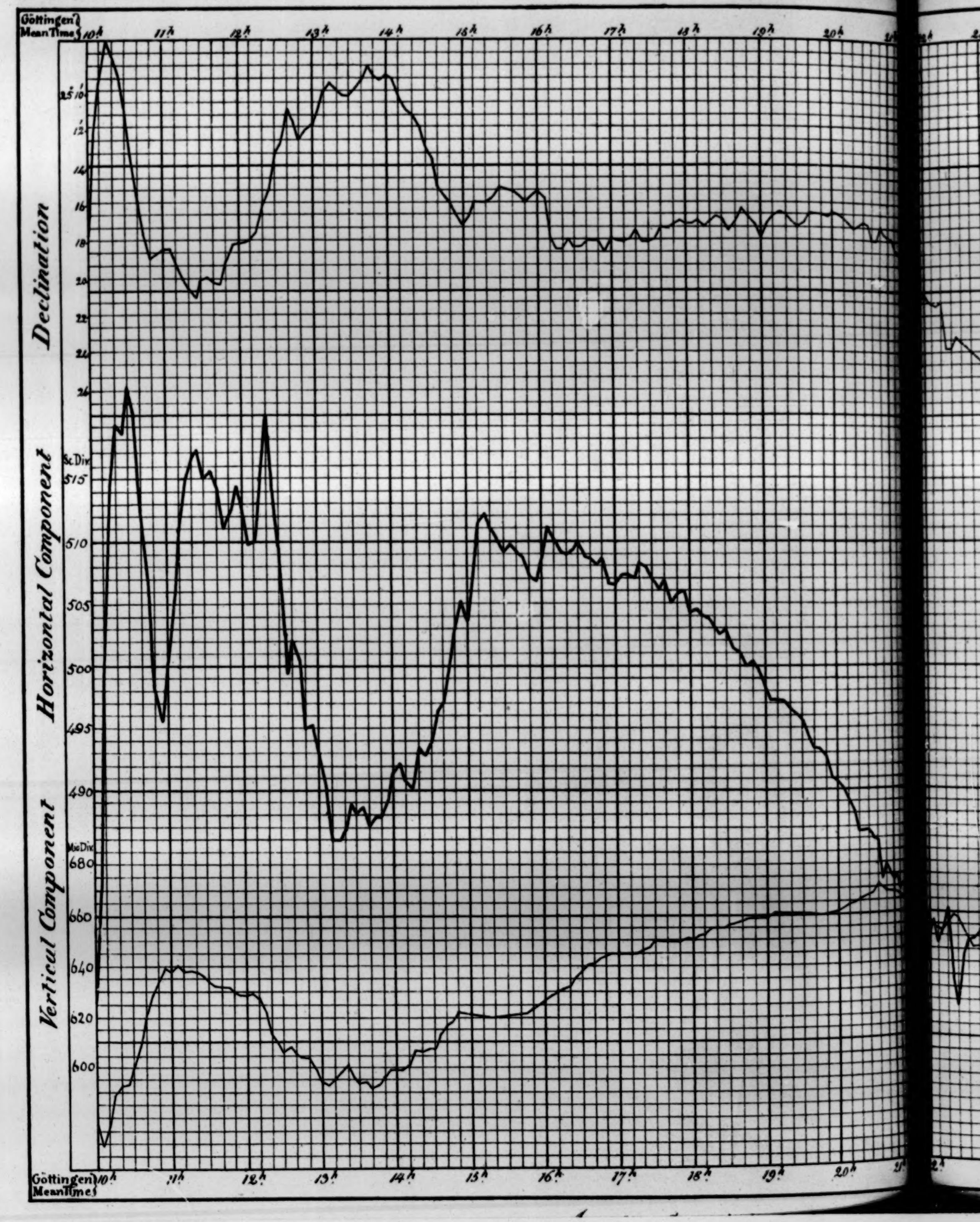

Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h
Declination
25°18'
20
22
24
26
28
Horizontal Component
Sc.Div.
550
545
540
535
530
525
Vertical Component
Sc.Div.
700
680
660
Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h

Obs tions April 19.20. 1843.

Plate V.

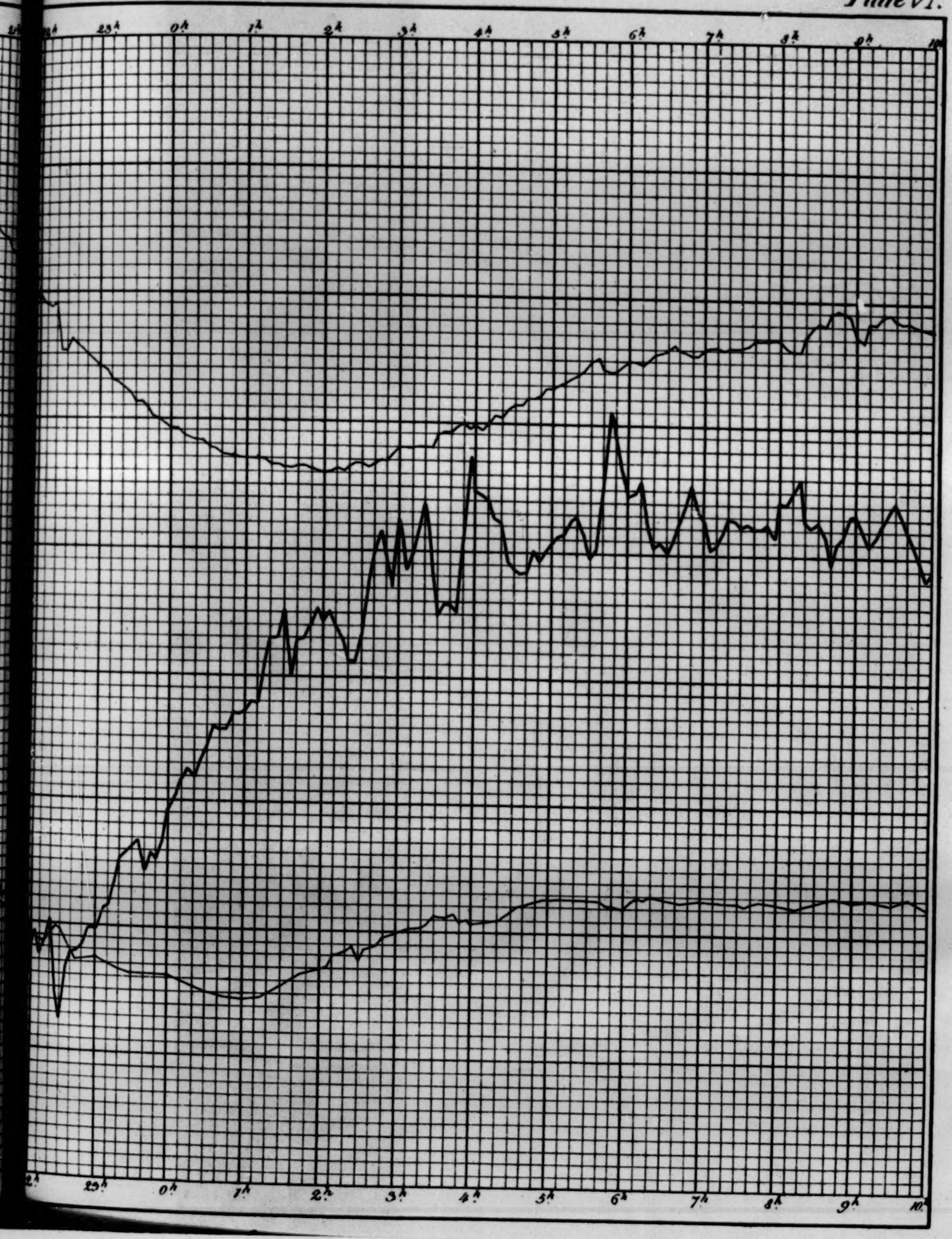


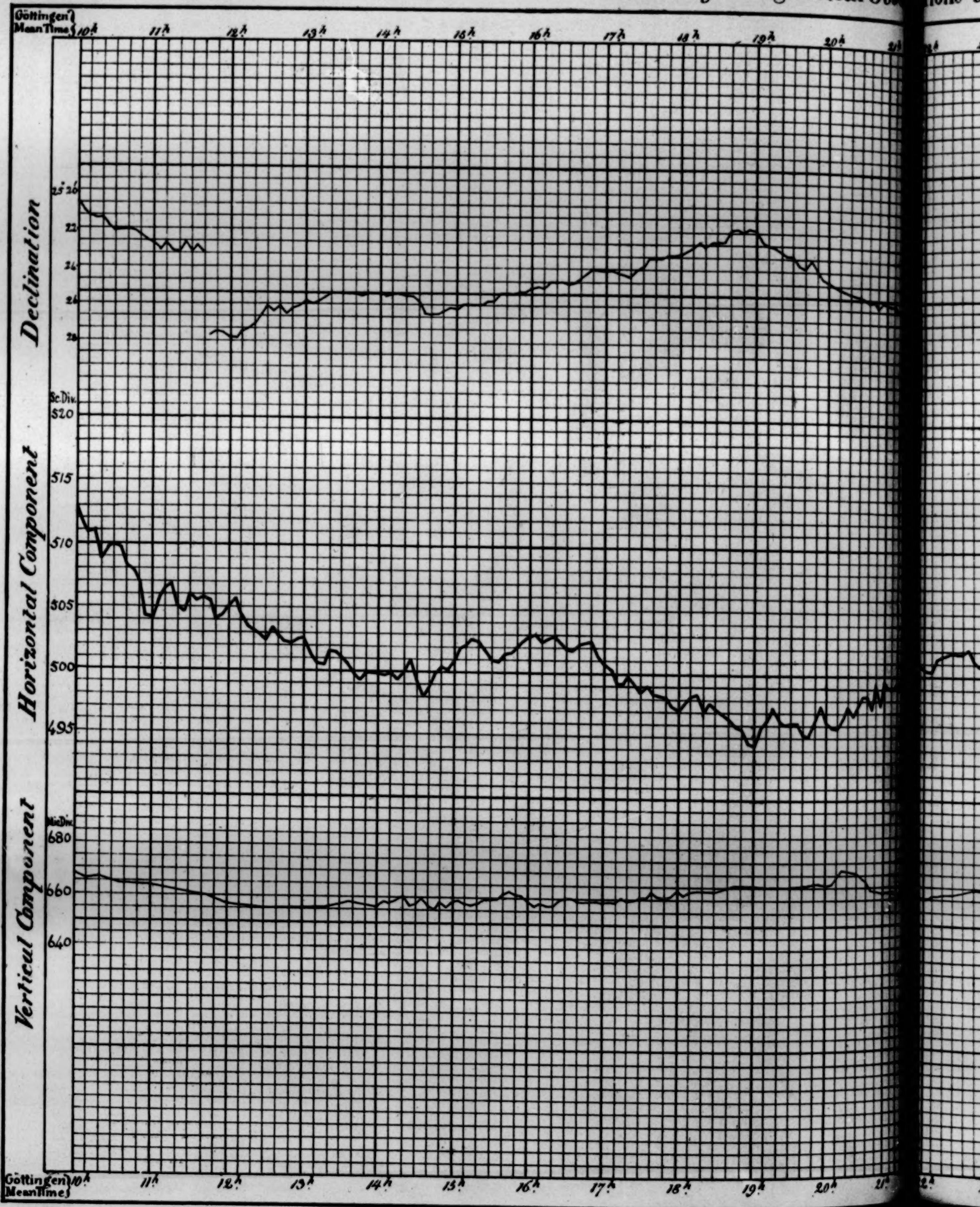
Term-Day Magnetical Ob ions M



ions May 26,27. 1843.

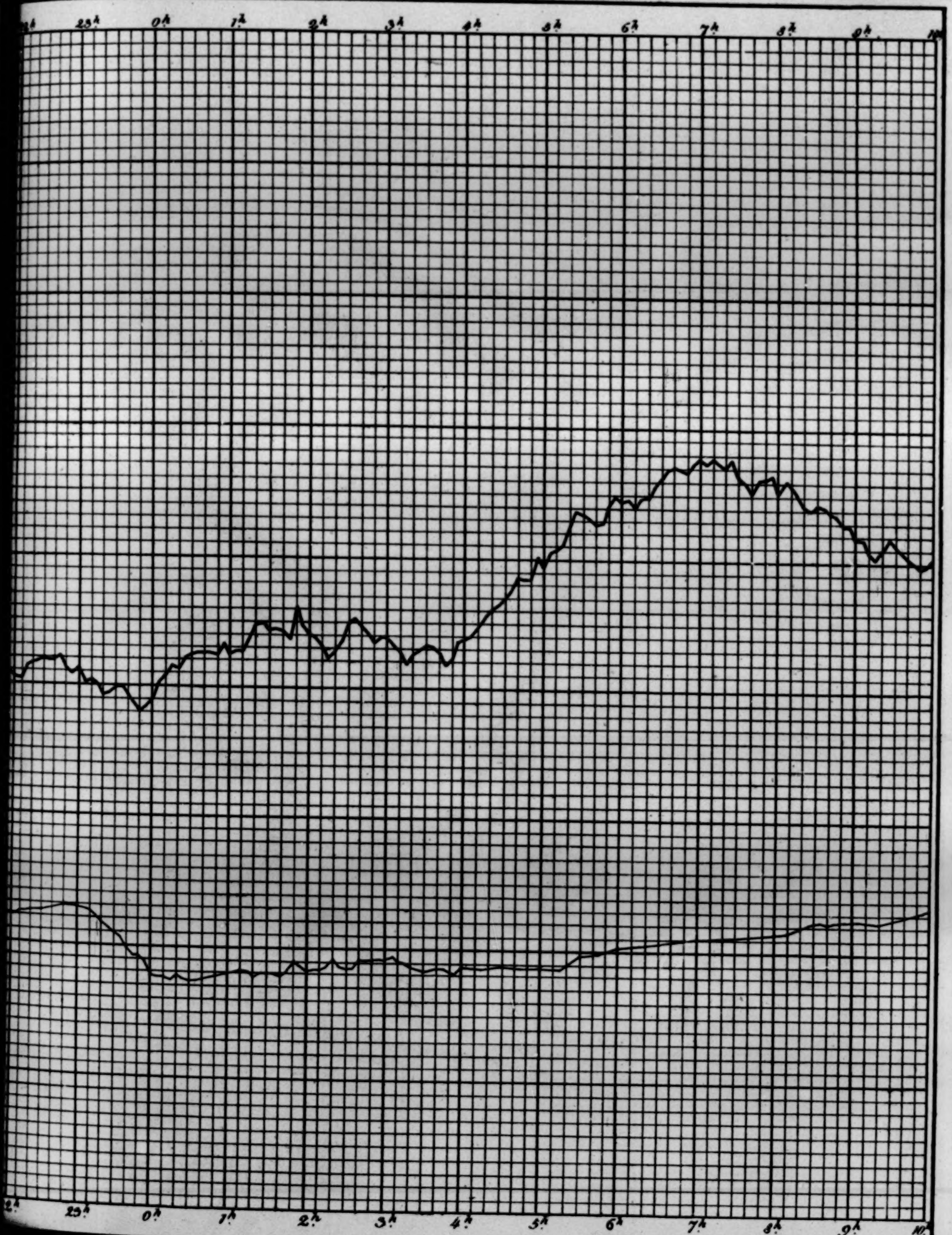
Plate VI.



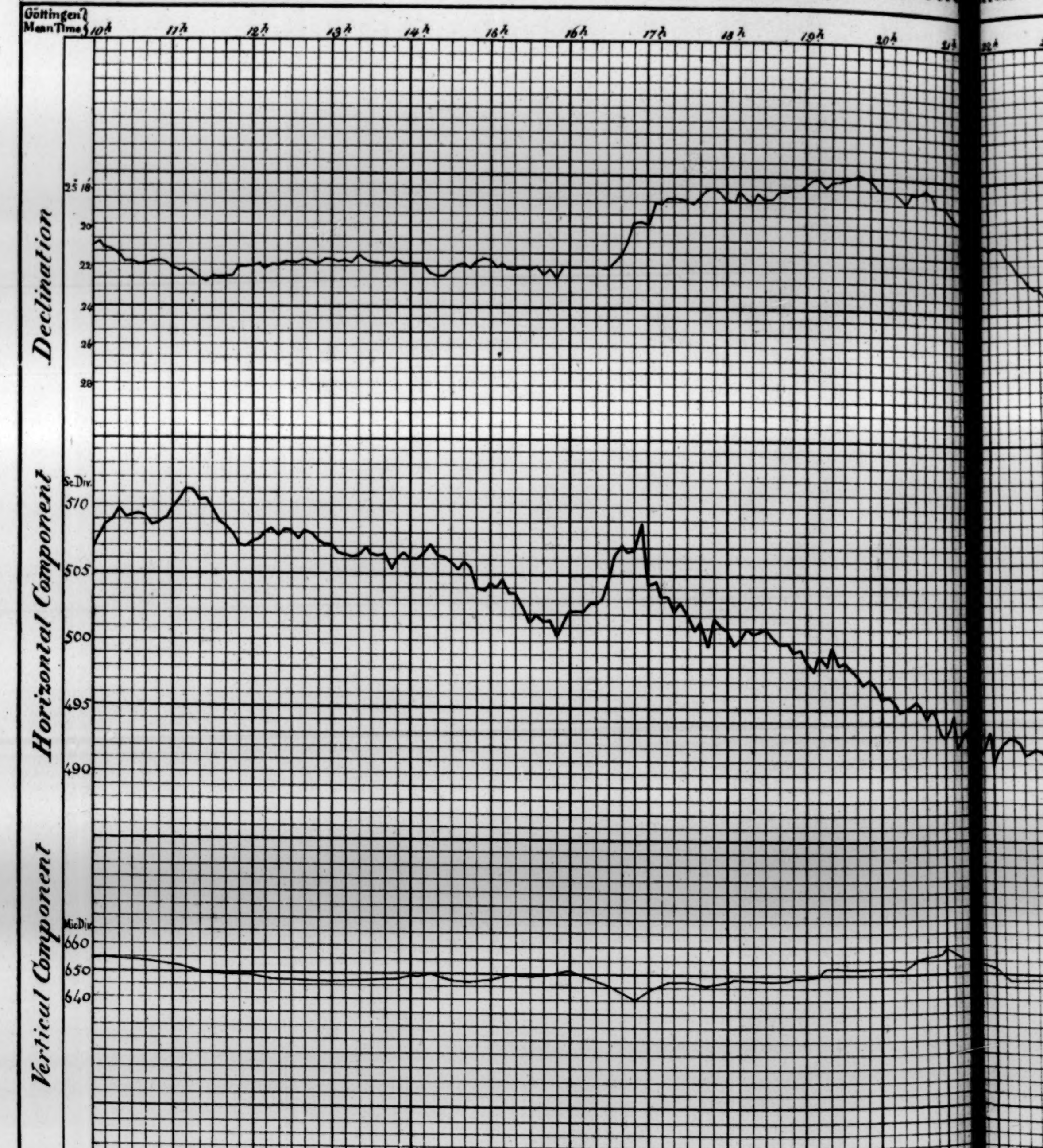

Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h
Declination
25° 20
22
24
26
28
Horizontal Component
Sc. Div.
520
515
510
505
500
495
Vertical Component
Mic. Div.
680
660
640
Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h

tions June 21, 22, 1843.

Plate VII.

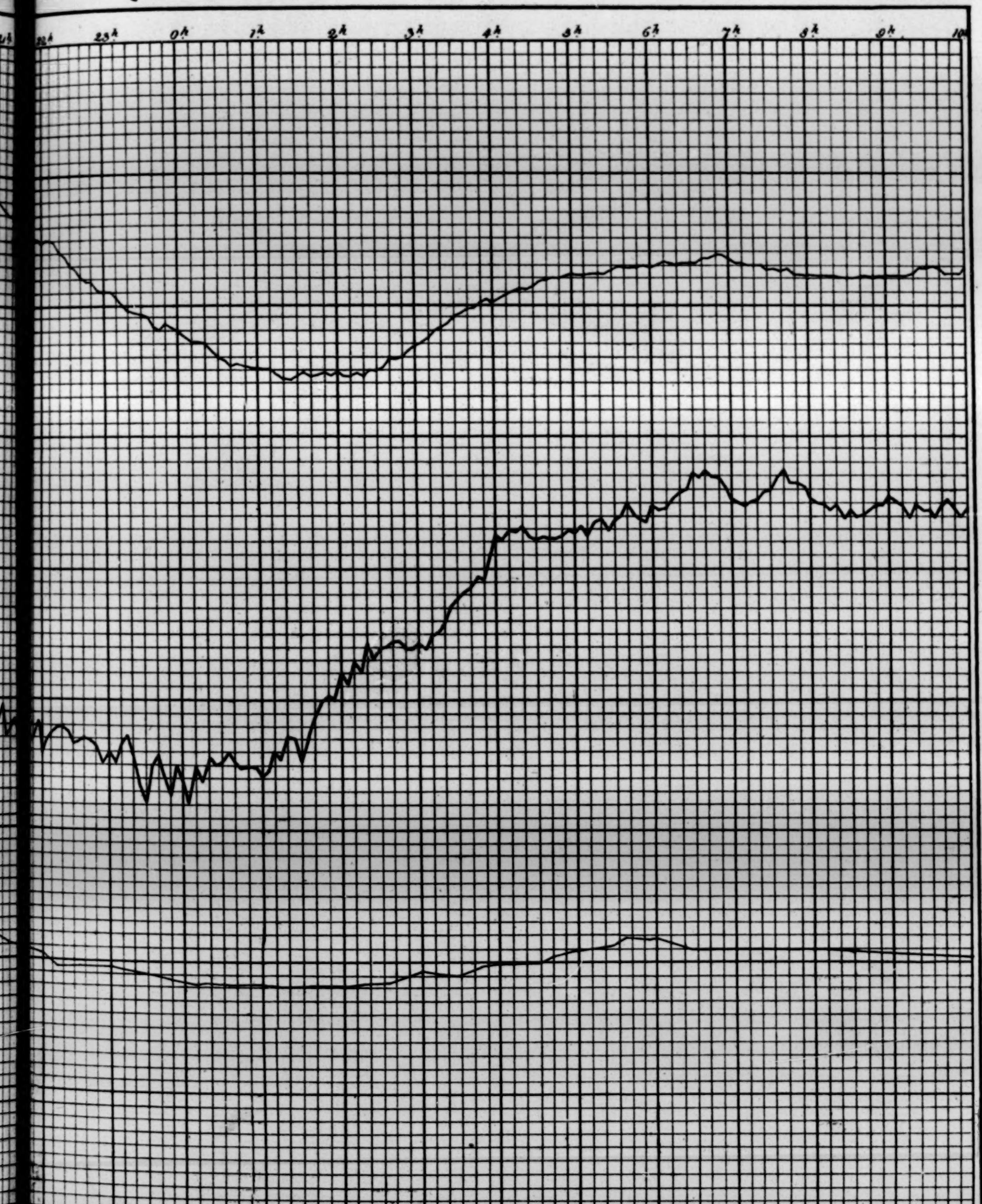


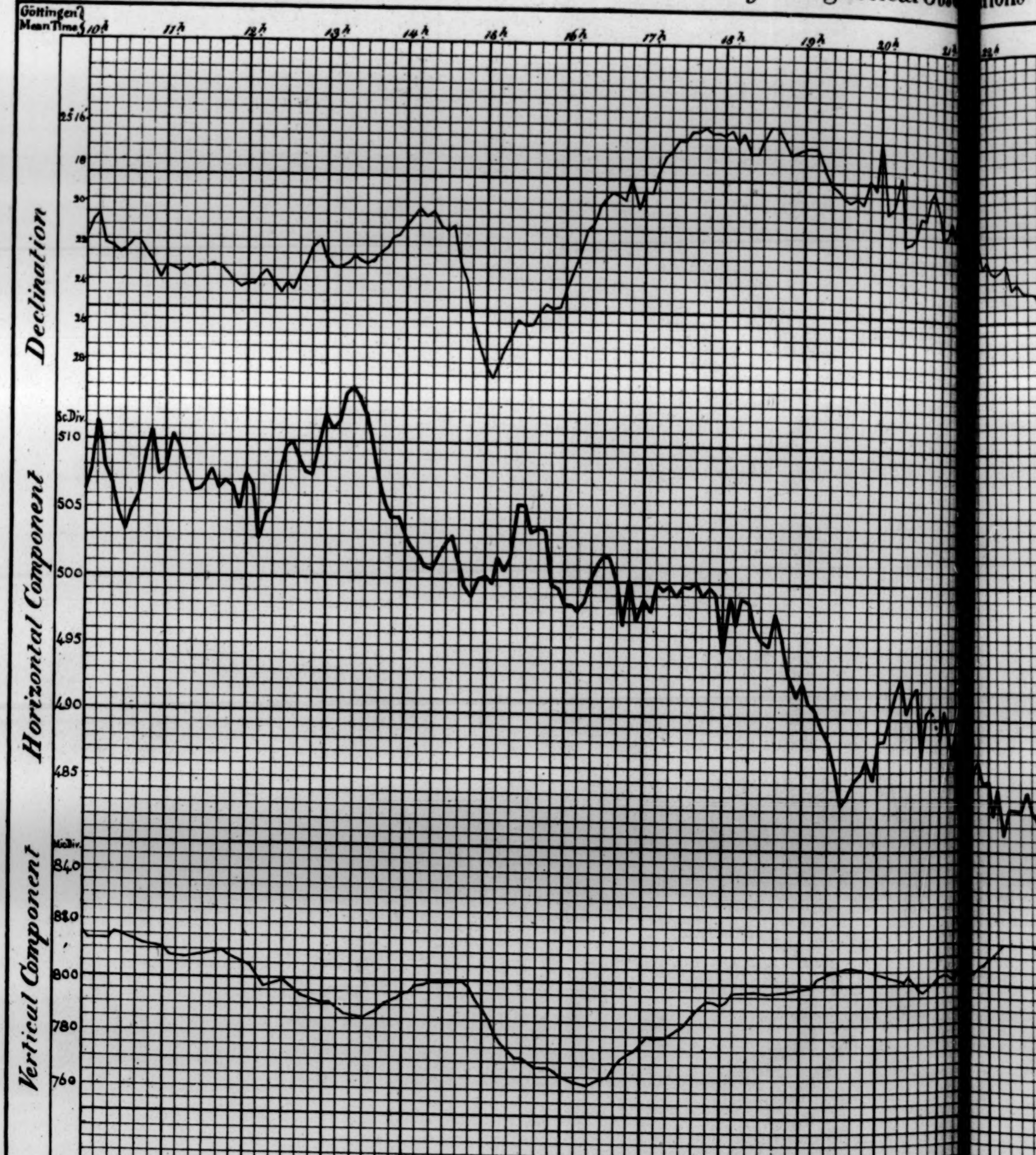
Term-Day Magnetical Obs tions J



tions July. 19, 20, 1843

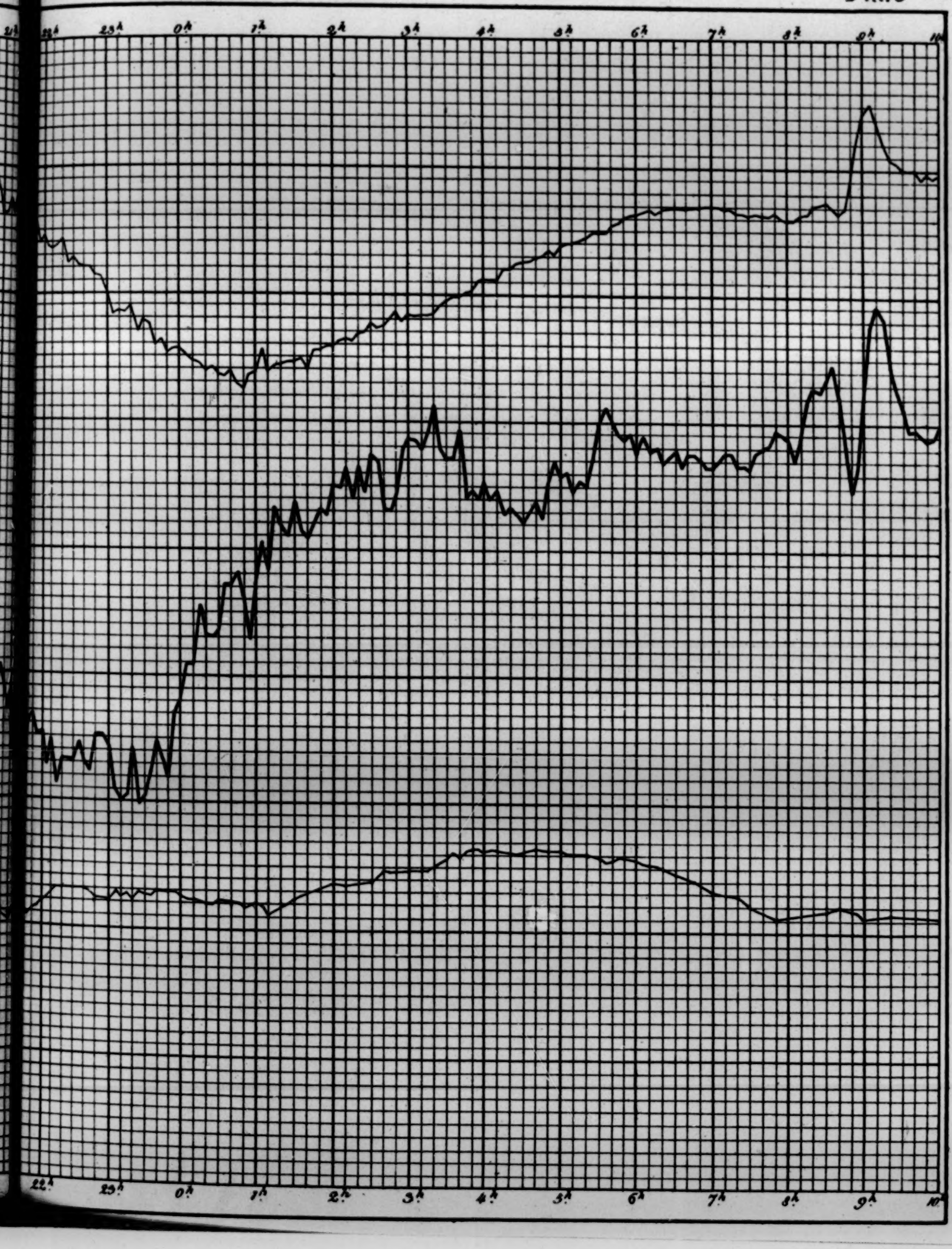
Plate VIII.

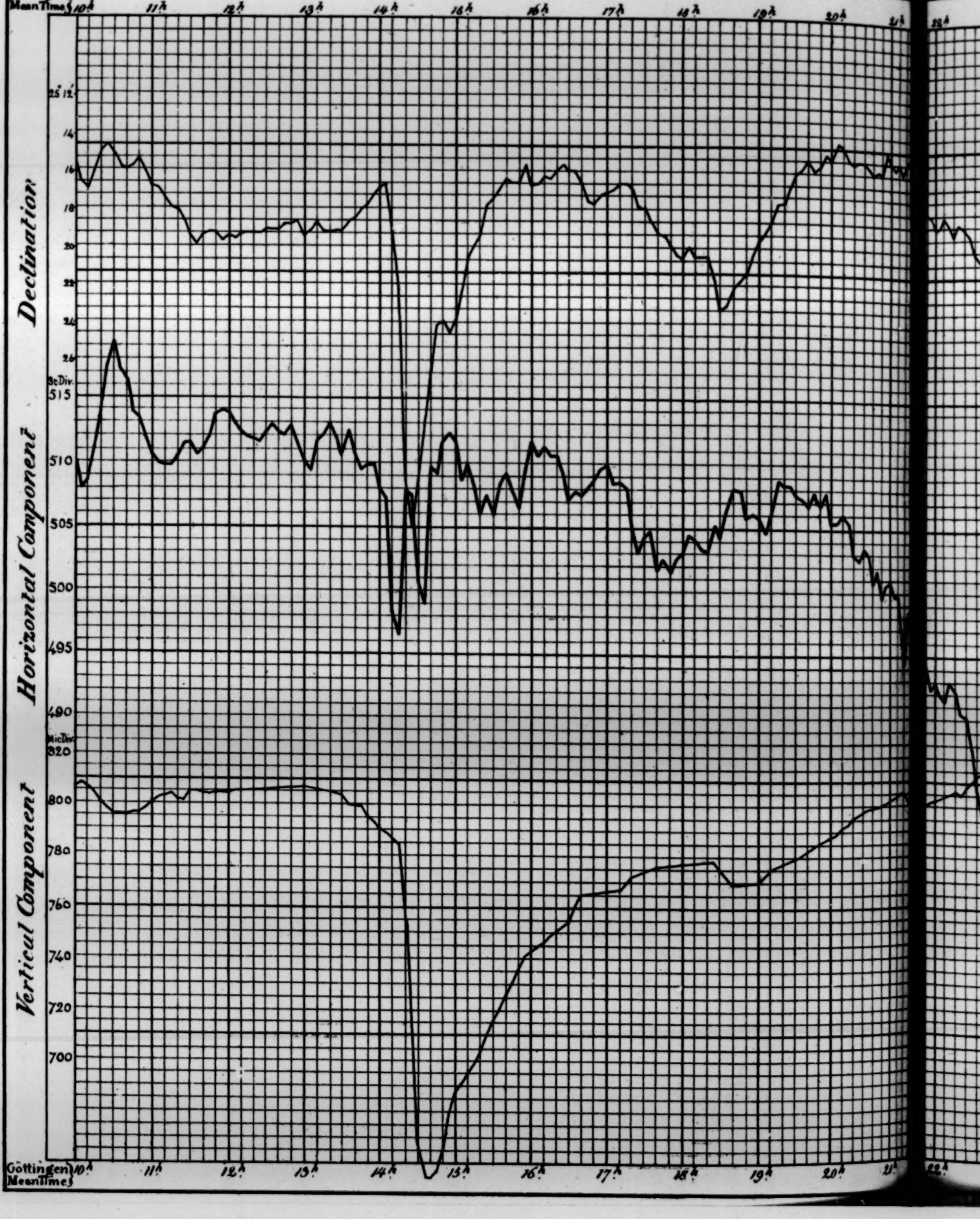



Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h
Declination
25°16
18
20
22
24
26
28
Horizontal Component
Sc.Div.
510
505
500
495
490
485
Vertical Component
Mic.Div.
840
820
800
780
760
Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h

b tions August 25 26 . 1843

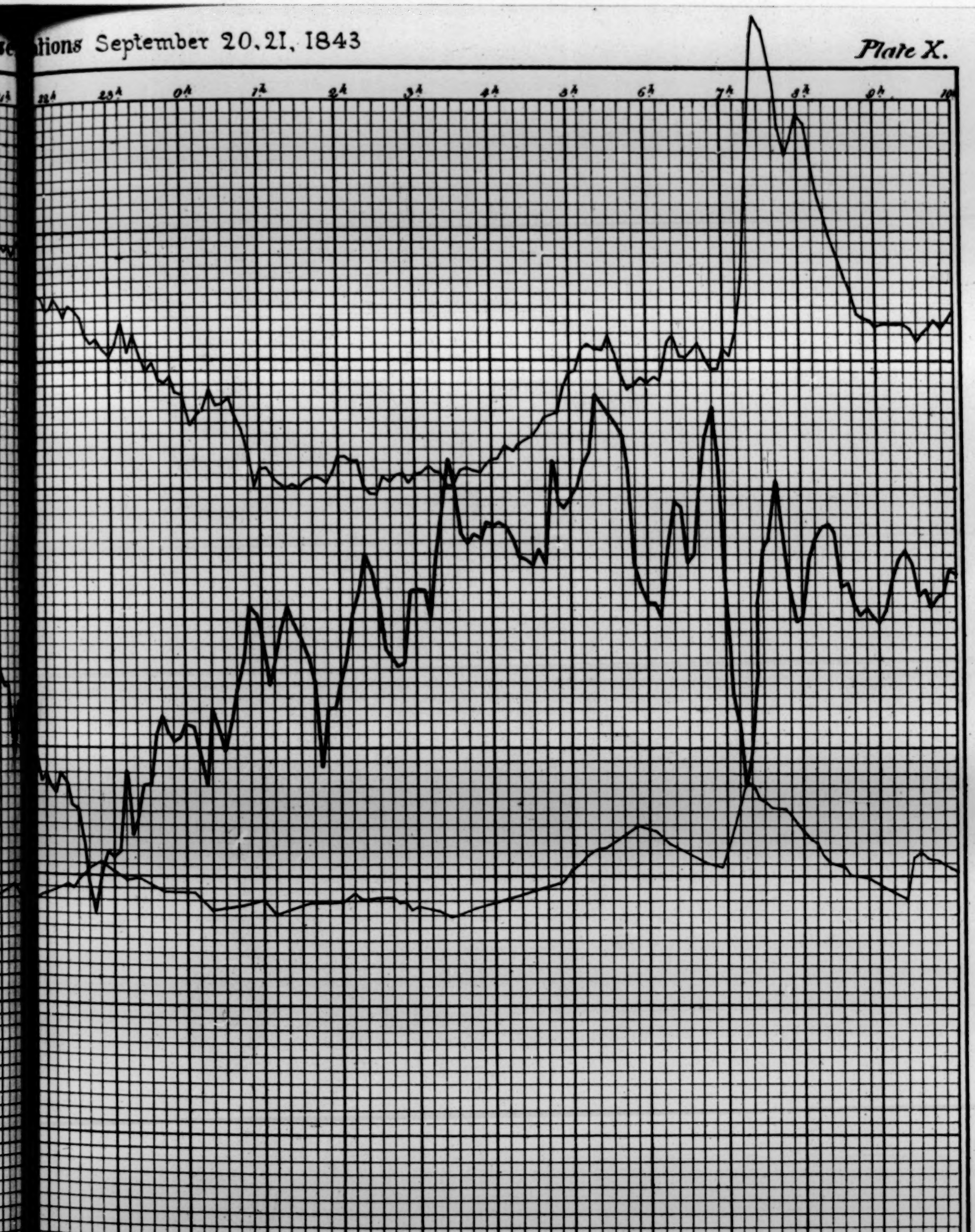
Plate IX.



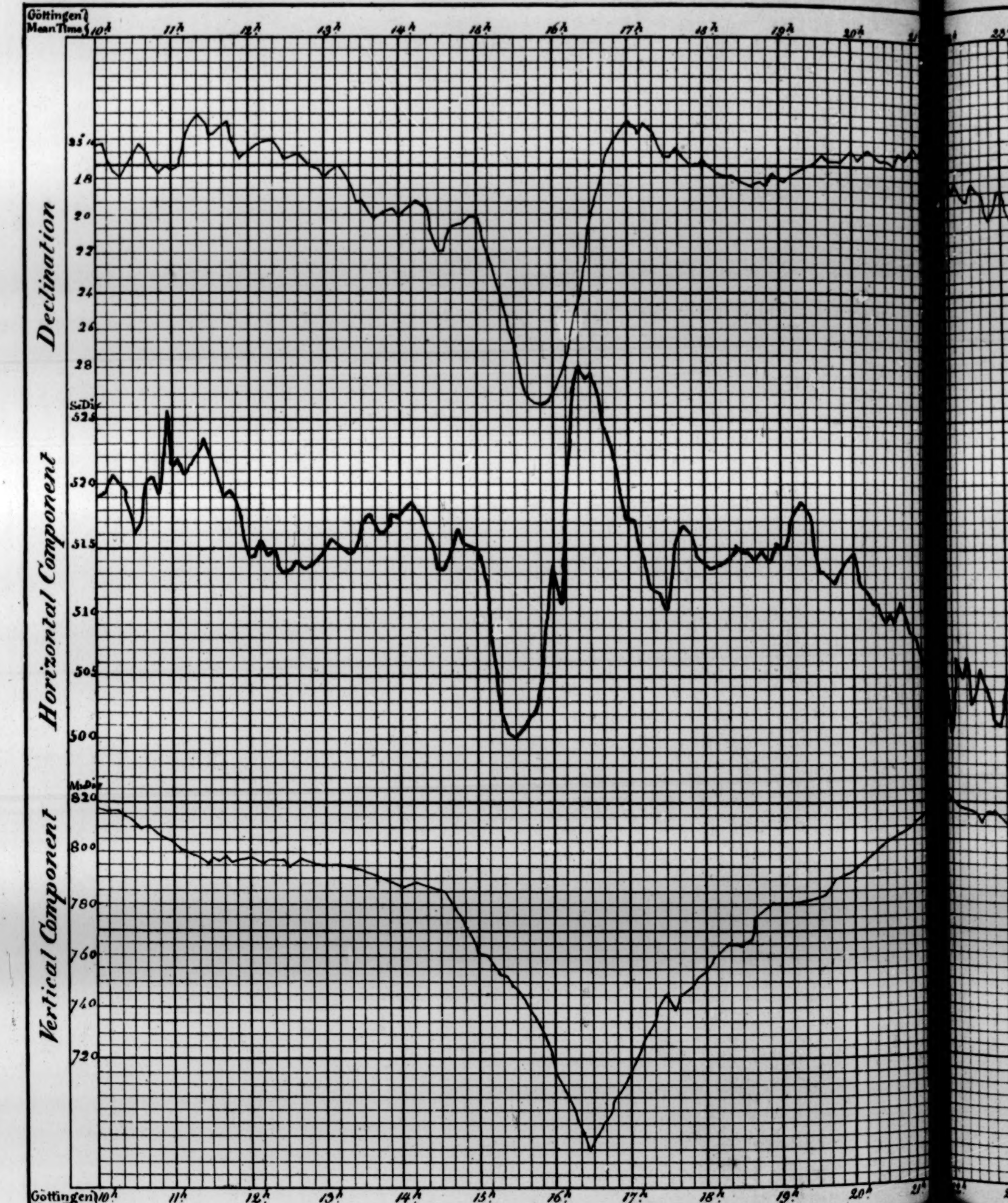

Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h
Declination
25° 12'
14
16
18
20
22
24
26
Horizontal Component
Sc.Div.
515
510
505
500
495
490
Vertical Component
Mic.Div.
820
800
780
760
740
720
700
Göttingen Mean Time

se tions September 20.21, 1843

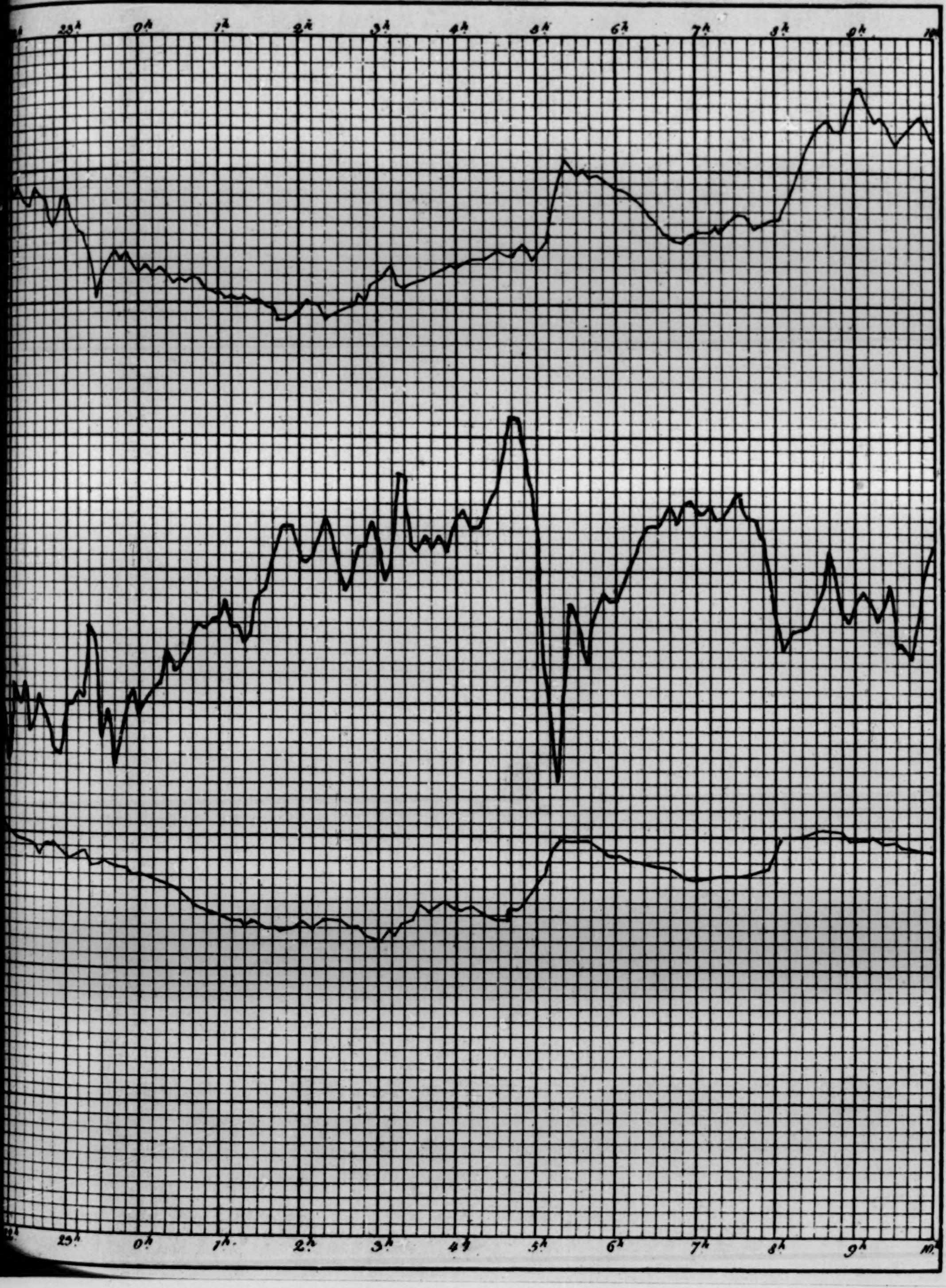
Plate X.



Term-Day Magnetical Ob ions Oc

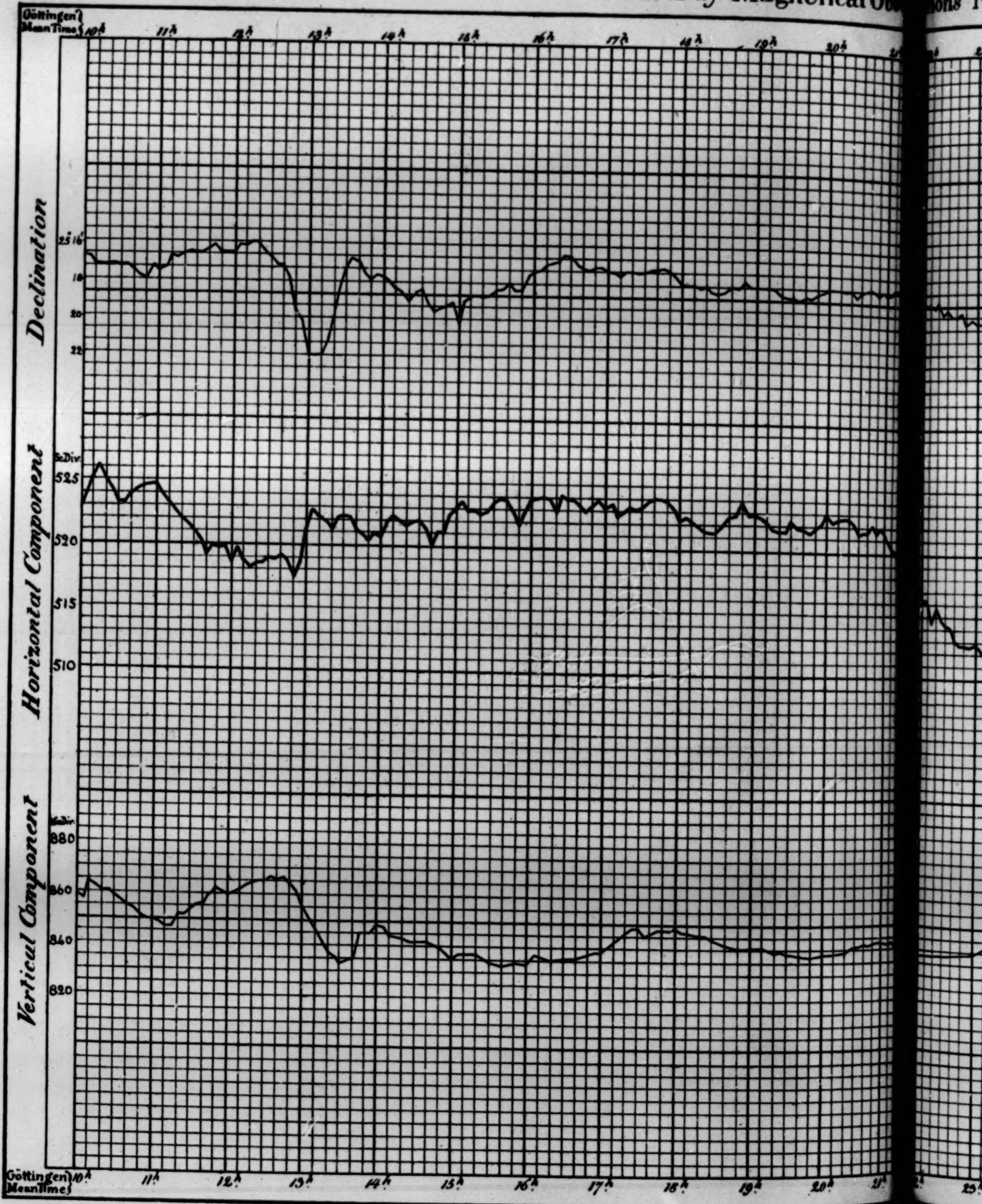


ions October 18,19, 1843. *Plate XI.*



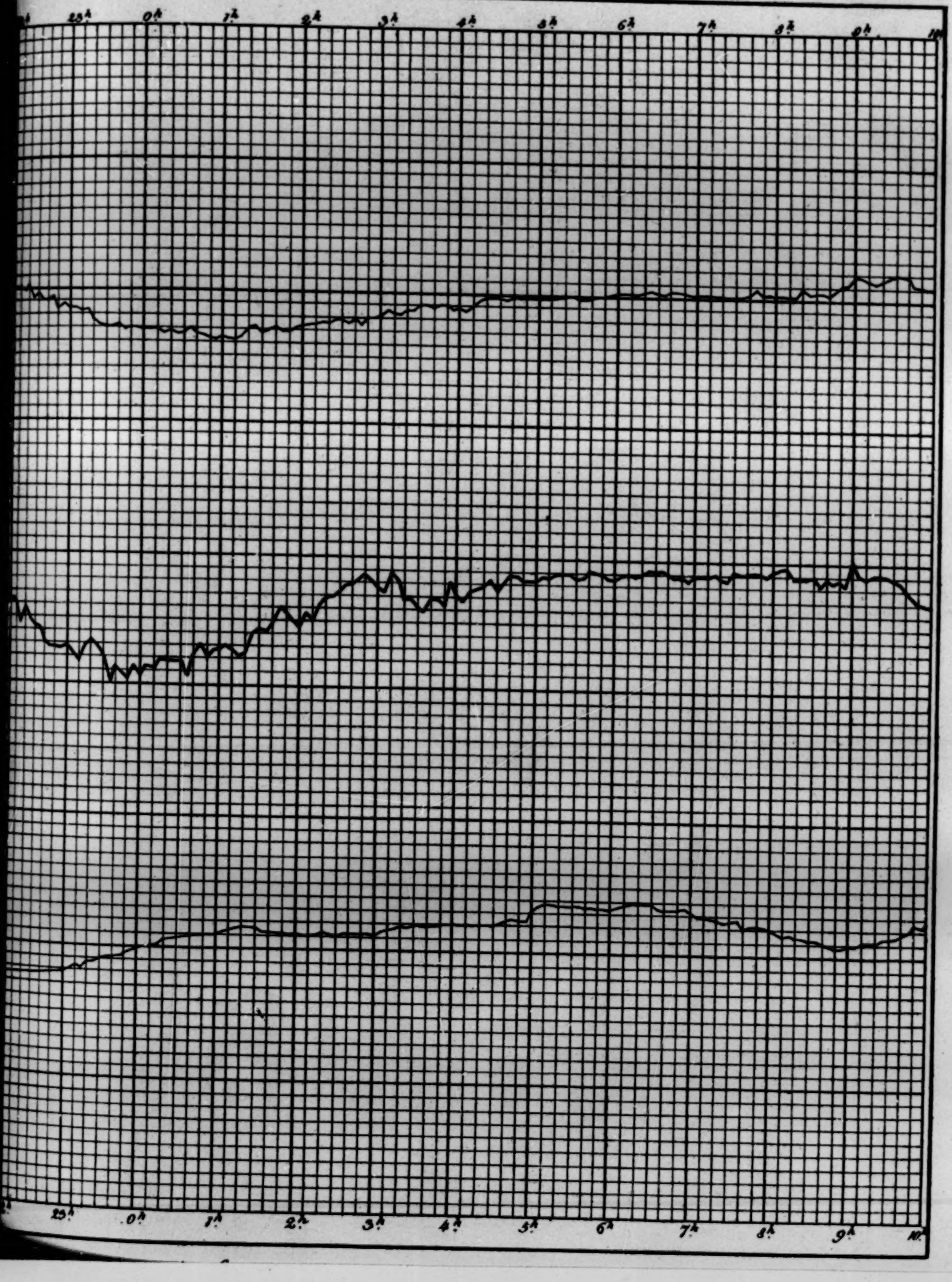
Makerstoun Observations

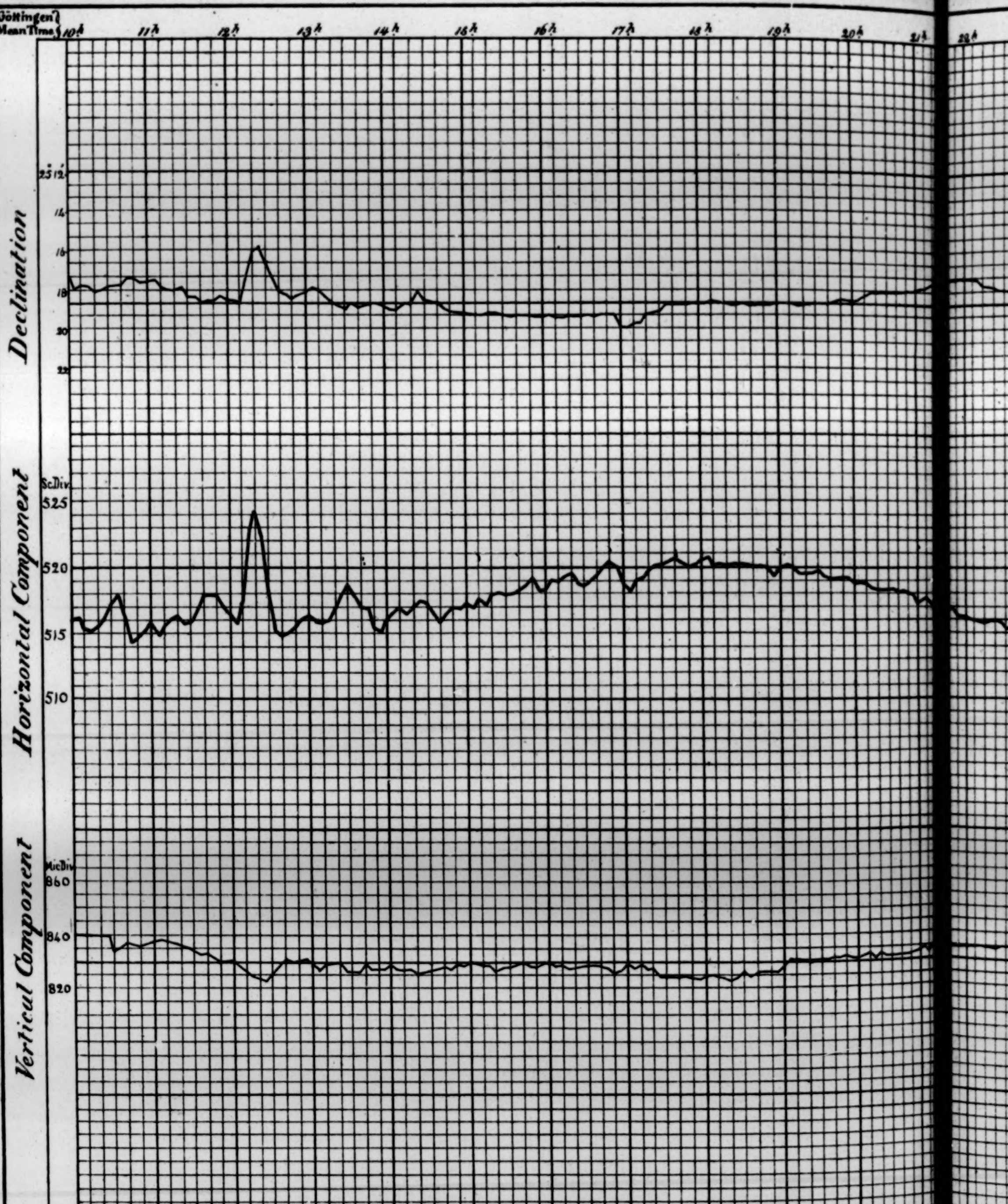
Term-Day Magnetical Ob ions N



ions November 24, 25.

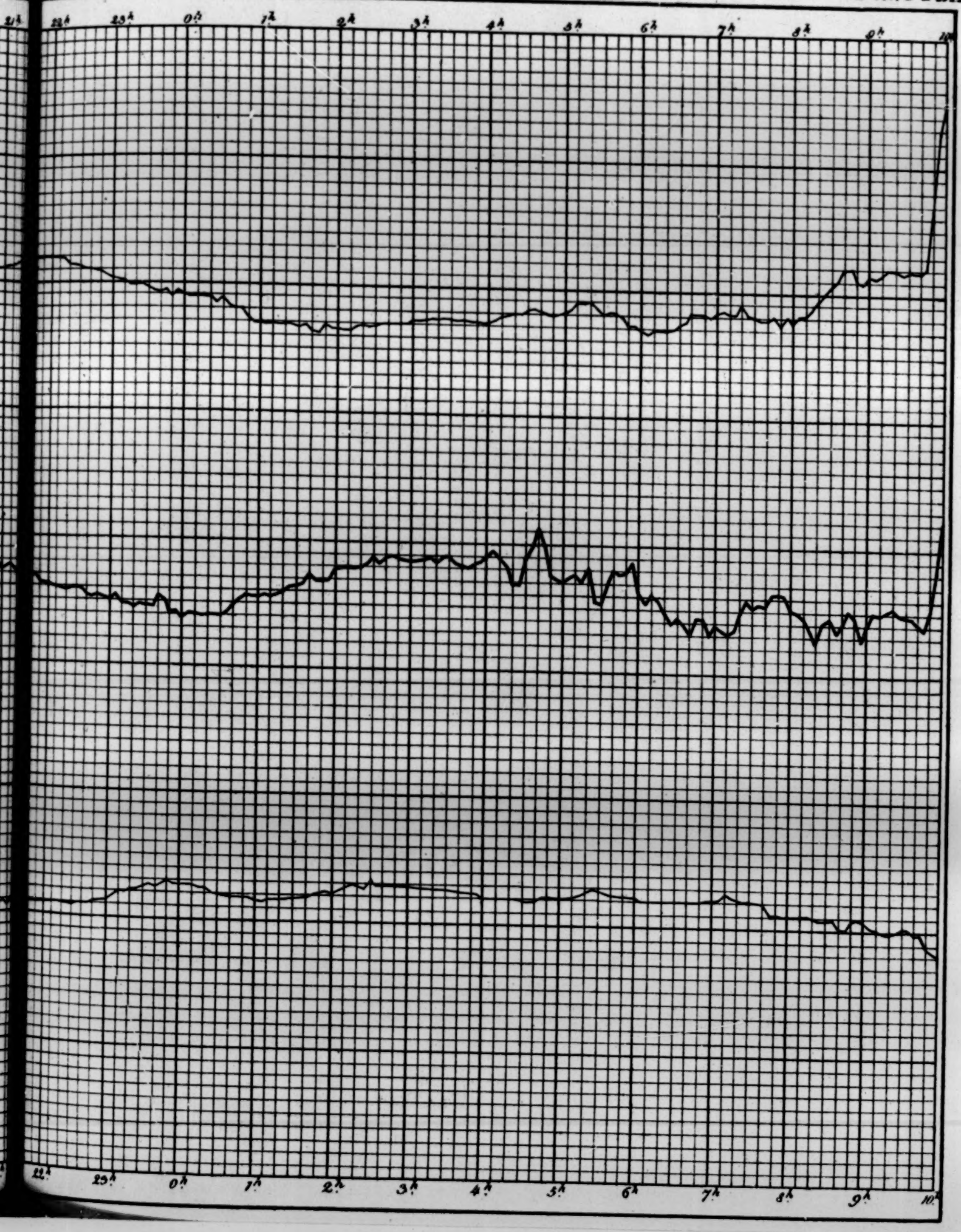
Plate XII.




Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h
Declination
25°12'
14
16
18
20
22
Horizontal Component
Sc.Div.
525
520
515
510
Vertical Component
Mic.Div.
860
840
820
Göttingen Mean Time
10h
11h
12h
13h
14h
15h
16h
17h
18h
19h
20h
21h
22h

ations December 20.21. 1843.

Plate XIII.



Transactions of the Royal Society of Edinburgh [microform]. -- Vol. 1 ([1783/86])-v. 46 ([1907/09]). -- Edinburgh : Printed for J. Dickson, Bookseller to the Royal Society : Sold in London by T. Cadell, 1788-1910. 46 v. : ill.

Irregular.
Some vols. have also a special title: Vols. 17-19, 22 suppl., Observations in magnetism and meteorology made at Makerstoun in Scotland; v. 31, Botany of

(Continued on next card)

Transactions of the Royal Society of Edinburgh [microform]. 1788-1910.

Socotra / by Isaac Bayley Balfour; v. 34, 42-44, The meteorology of the Ben Nevis Observatories ... / edited by Alexander Buchan ... and Robert Traill Omond.
Continued by: Transactions of the Royal Society of Edinburgh, v. 47, published in 1911.
The first 4 vols. are each in 3 sections: History of the Society; Papers of the Physical Class; Papers of the

(Continued on next card)

Transactions of the Royal Society of Edinburgh [microform]. 1788-1910. (Card 3)

Literary Class. The Literary Class ceased to appear after v. 4.
Proceedings for 1783-1803 are included in "History of the Society" which appeared in v. 1-5 of the Society's Transactions; after 1803 they were suspended until Dec. 1832 when they were issued separately.
Vols. 1-5, 7-16, 20-30, 32-33, 35-41, and 45 include:

(Continued on next card)

Transactions of the Royal Society of Edinburgh
[microform]. 1788-1910. (Card 4)

List of fellows.
Imprint varies.
References: Scudder, S. Cat. of scientific serials, 124.b.
Includes bibliographical references and indexes.
Indexes: Vols. 1 (1783)-13 (1836) in v. 13; v. 1 (1783)-34 (1888) published separately (1 v.) in 1890; v. 35 (1889)-46 (1908) published separately (1 v.) in 1910.

(Continued on next card)

Transactions of the Royal Society of Edinburgh
[microform]. 1788-1910. (Card 5)

Microopaque. New York : Readex Microprint, 1984.
cards ; 23 x 15 cm. -- (Landmarks of science. 2, Scientific journals)

Vol. XVIII.
Edinburgh : Published by Robert Grant & Son ... and T. Cadell ... London, 1848.
[4], lxvii, [1], 447 p., [16] leaves of plates.

Twelve plates printed on double leaves.